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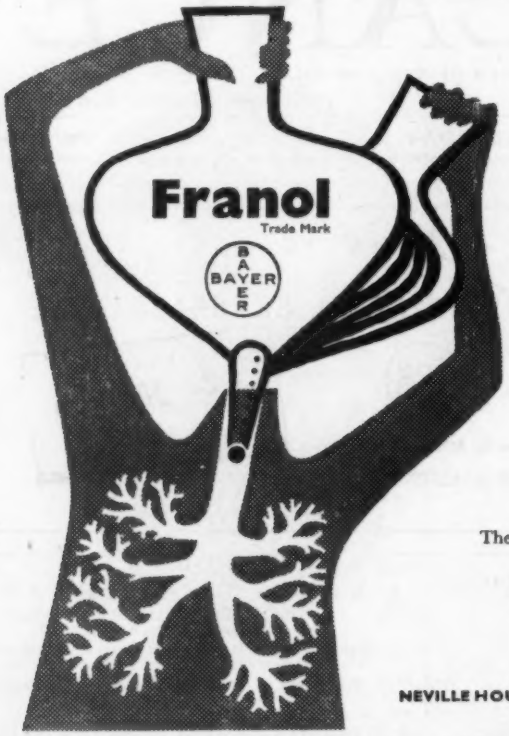

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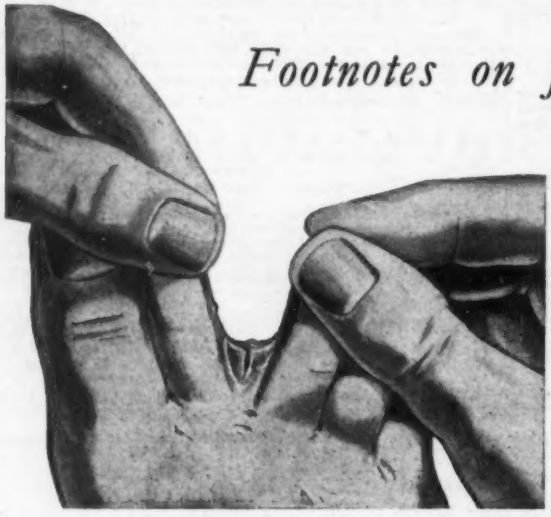

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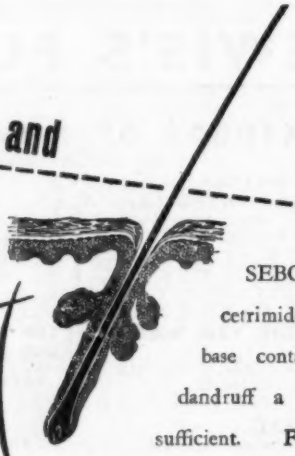

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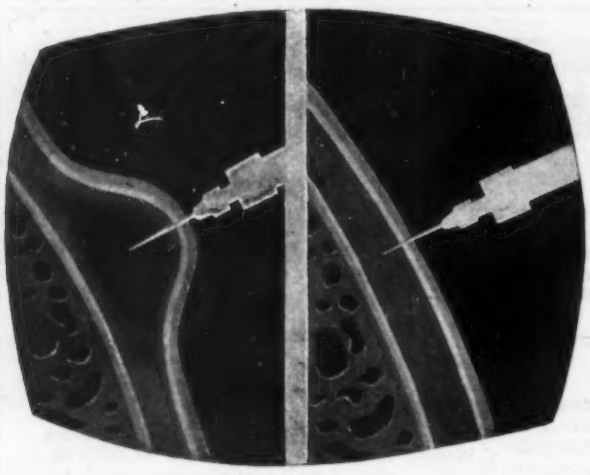

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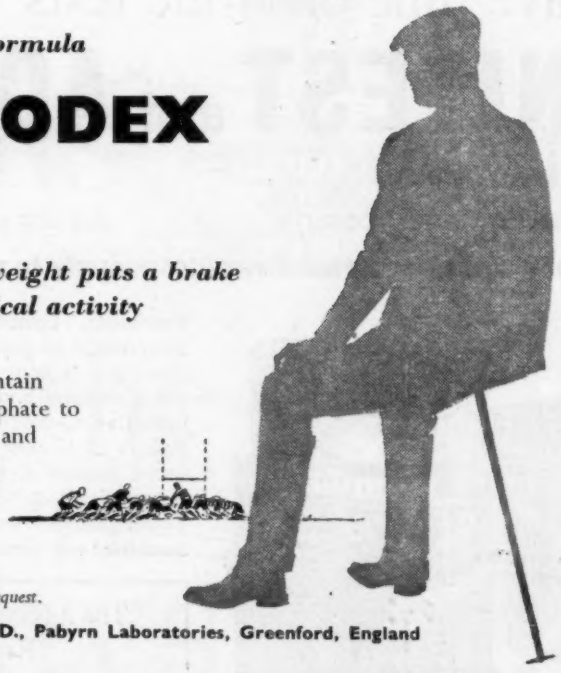

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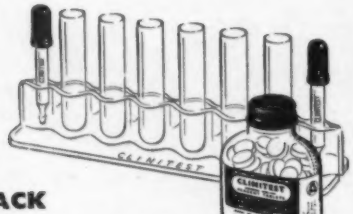

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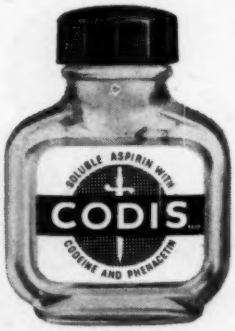
Codis  and the Physician

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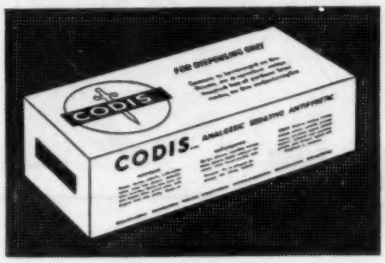

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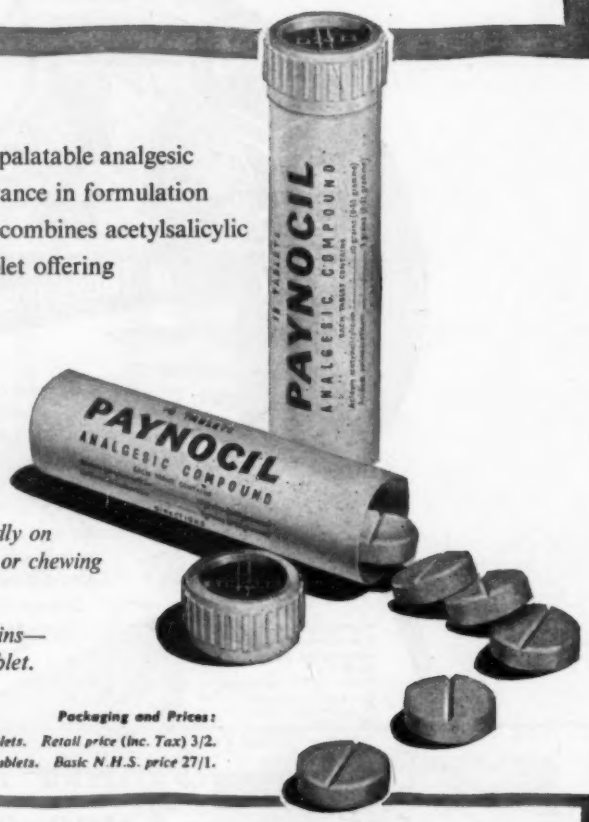

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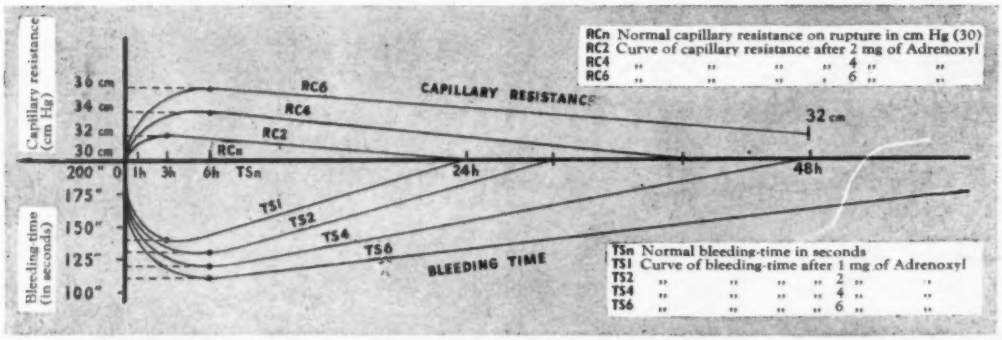

This graph gives dramatic evidence of the effect of Adrenoxyl on capillary resistance and bleeding-time

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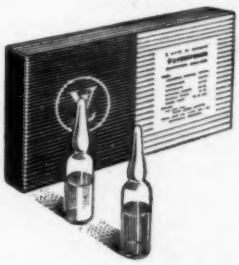

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Schweiz. med. Wschr., 1941, **71**, 1093
Rev. méd. Suisse rom., 1941, **61**, 585
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1. ACTA OBST. GYNEC. SCAND., 1950, *30*, suppl. 6.
2. BRIT. MED. *J.*, 1954, *I*, 893.

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AN ANÆSTHETIST LOOKS AT A BURNT CHILD

D. W. SHANNON
M.B. Edin., F.F.A. R.C.S.
CONSULTANT ANÆSTHETIST, ROYAL HOSPITAL FOR SICK CHILDREN, EDINBURGH

"The success of surgical treatment depends on the sum of a host of indispensible contributions. . . . The best results follow only when each member of a hospital team, doctors and nurses alike, carries out their allotted task punctually and perfectly" (Learmonth 1940).

IN the treatment of few surgical conditions is this truth better demonstrated than in the care of a seriously burnt child. The prevention and the treatment of shock, the preparation of burnt surfaces for grafting, the outcome of these operations, the relief of pain from dressing, and the maintenance of metabolic requirements depend not on techniques of a single individual but on the coördinated efforts of all members of a surgical team and the ability of each member to appreciate the problems of his colleagues.

The purpose of this paper is to review the position of the anæsthetist in such a team, to indicate his approach to the challenge, and to suggest possible approaches to meet the problems as they arise.

Prevention and Treatment of Oligæmic Shock

No matter what is the cause of oligæmic shock, its ultimate effect is anoxia. Recent work has shown that tissue anoxia converts shock from a reversible process to an irreversible state.

Anoxia is also the most common cause of anæsthetic complications. Awareness of its likelihood, and its recognition and early treatment, are fundamental to good anæsthesia. It follows, therefore, that the anæsthetist is well equipped by training and experience to advise on the treatment of shock following burns.

In addition to correction of the ætiological factor the treatment of shock should be aimed at easing the burden on the vital systems by increasing the available oxygen supply, by improving its transport to the tissues, and by reducing the demand by the tissues.

OXYGEN TRANSPORT

After a burn fluid is lost and red cells are destroyed in proportion to the extent and depth of the burn. These losses initiate shock, and correction by replacement of blood and fluid is urgent and imperative.

There is a tendency to disparage the giving of whole blood and to favour the replacement of lost fluids with plasma and plasma expanders alone; yet in an extensive burn the resulting massive destruction of red cells and loss of hæmoglobin reduce the total oxygen capacity of the circulating blood to dangerous levels and present an immediate grave prognosis, particularly in the young. The hæmoglobin lost can be made good only by transfusion of whole blood. The use of whole blood, however, should not be confined to the extensive burn. Any burnt patient with healing delayed beyond three weeks has depressed marrow function with a low red-cell count. If this secondary anæmia is allowed to persist, a metabolic disturbance is set up which has serious consequences to the patient. It must be treated by repeated blood-transfusions, which aim at maintaining a hæmoglobin level of 80%.

All patients with burns of more than 10% of their surface area require intravenous therapy to counter shock. The volume of fluid given must be carefully calculated if it is to be adequate and overloading of the circulation is to be avoided.

Empirical assessment can never be satisfactory even in expert hands. Various formulæ are available. That introduced by Barclay and Wallace (1954) combines safety with effectiveness and simplicity. Their formula is based on the extent of the burn (fig. 1) in relation to the patient's age (table I) and specifies the number of millilitres of plasma and electrolyte per 1% of body-surface burnt. The calculated total is divided into three equal parts, a third being given in the 8 hours immediately following the injury; a third 8–24 hours after; and the remaining third 24–48 hours after.

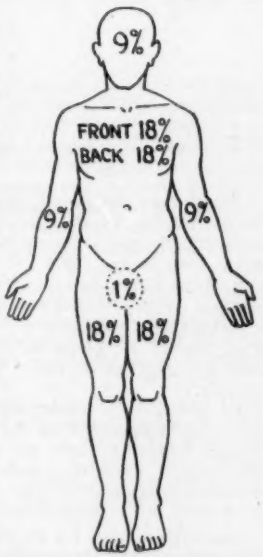

Fig. 1—"Rules of nine" for estimating area of burn.

Consider, for instance, a child, aged 18 months, admitted 2 hours after injury, with burns involving 20% of his body-surface. According to table I the requirement is 15 ml. of plasma and 15 ml. of saline solution for each 1% of body-surface burnt. Therefore 48 hours' requirement for this child is 15 × 20 = 300 ml. of plasma + 300 ml. of saline solution. His requirement for the 8 hours immediately following the burn is 100 ml. + 100 ml., and this quantity must be given in the first 6 hours of treatment because he was admitted 2 hours after injury.

Table I applies to burns of up to 30% of body-surface. For more extensive burns estimations from this table would lead to overloading of the circulation; and volumes equivalent to 10% body-weight should be given (table II).

It is important to remember that these amounts of fluid replace only the fluid lost as a result of the burn and are therefore termed "replacement fluids." A further adequate volume must be given to cover the normal metabolic fluid requirements of every child (table III). Such volumes are termed "requirement fluids."

Replacement fluid for patients with burns of less than 10% of the body-surface is given by mouth, and for patients with burns of more than 10% of the body-surface intravenously.

TABLE I—BURNS OF UP TO 30% OF BODY-SURFACE: PLASMA AND ELECTROLYTE REQUIREMENTS IN FIRST FORTY-EIGHT HOURS, AT DIFFERENT AGES

Fluid	Age (yr.)																			
	Birth–2/12	3/12–6/12	6/12–9/12	9/12–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	Adult
Electrolyte solution (ml.)*	7	10	12	13	15	21	24	27	31	35	40	44	46	51	56	62	67	78	88	96	104	110
Plasma (ml.)*	7	10	12	13	15	21	24	27	31	35	40	44	46	51	56	62	67	78	88	96	104	110

* Per 1% of body-surface burnt.

TABLE II—BURNS OF OVER 30% OF BODY-SURFACE: AVERAGE WEIGHT AT DIFFERENT AGES, FROM WHICH FLUID REQUIREMENT IN FIRST FORTY-EIGHT HOURS IS CALCULATED

—	Age (yr.)																				
	Birth–3/12	3/12–6/12	6/12–9/12	9/12–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	Adult
Weight (kg.)	5	7	9	10	13	15	17	18	20	22	24	26	29	32	35	39	43	48	54	59	65	70

For each kg. 100 ml. of fluid should be given.

TABLE III—FLUID INTAKE (AS GLUCOSE DRINKS OR WATER) REQUIRED TO COVER NORMAL DAILY METABOLIC REQUIREMENTS

—	Age (yr.)																				
	Birth–3/12	3/12–6/12	6/12–9/12	9/12–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	Adult
Metabolic requirement (ml.)	700	1000	1150	1200	1300	1400	1400	1400	1500	1500	1500	1600	1600	1700	1700	1800	2000	2200	2400	2600	2800	3000

As already indicated, the restoration of circulating blood volume is of little value if its oxygen-carrying capacity (hæmoglobin) remains deficient. In all patients with deep burns, and in all patients with extensive superficial burns involving more than 25% of the body-surface, where the destruction of red cells has been considerable, half the total intravenous replacement fluid should be given as whole *fresh* blood, the other half being given as equal parts of saline solution and plasma.

In addition to replacement fluids, metabolic requirement fluids are given by mouth hourly unless the patient cannot retain oral fluid, as in gastric stasis and burns of the mouth, when it is also given intravenously as 5% dextrose in water.

OXYGEN SUPPLY

The urgent need for fluid replacement must not blind the clinician to the fact that anoxia, although initiated in burn cases by a decrease in the oxygen-carrying capacity of the blood, is maintained and indeed exaggerated by other factors which, although not serious in themselves, may either in association with blood-loss or through their cumulative effect jeopardise the patient's recovery.

Clinical anoxia cannot be classified into the compact compartments defined by Barcroft. Oxygenation of the tissues depends on the integrity of several interdependent systems (fig. 2), impairment of any one of which must necessarily affect all. Each system must be carefully checked, if irreversible damage from anoxia is to be prevented. The lungs are the reservoir from which the blood draws its oxygen. In the period immediately following a burn, when blood and fluid are to be replaced, it is important—perhaps vital—that the tension and volume of oxygen in the lungs be maintained at optimal levels. This depends on a clear airway and minute pulmonary ventilation.

Airway

This can readily become obstructed. The breathing of hot irritating fumes may cause laryngeal œdema or lead to the accumulation of desquamated cells and mucopurulent secretions in the tracheobronchial tree. The patient will be cyanosed and will struggle for breath. The need for clearing the airway is imperative, and treatment by tracheotomy or by bronchoscopic aspiration will, where necessary, take precedence over the replacement of fluids.

Less dramatic causes of respiratory embarrassment may tend to pass unnoticed, but their very persistence in a shocked patient can delay recovery and may on occasion eventually endanger life. Crusting of secretions within the nasal vestibules is common not only in burns involving the face but also in any dehydrated child. It forces mouth-breathing with all its harmful effects. Thick viscid postnasal secretions ooze down into the laryngeal region and cause exhaustive bouts of coughing and intensify respiratory embarrassment. Some time ago a child in this unit died from asphyxiation due to a mucous crust blocking the laryngeal aperture. The cause of this sudden unexpected death was not appreciated until necropsy. Without doubt the nurses must give the same scrupulous attention to oral and nasal hygiene as to the care of the burnt surface.

Other simple happenings, innocent in themselves, are often overlooked. Lolling of the child's head on the pillow may lead to obstruction of the airway, particularly if the tonsils and adenoids are enlarged. In such a child, if the airway cannot be maintained by simple procedures, a nasopharyngeal airway lubricated with an analgesic (2% cinchocaine) ointment should be passed.

Again, if the circulation is overloaded by excessive replacement of fluids, a transudate fills the alveolar spaces and interferes with the diffusion of oxygen across the alveolar-capillary membrane. This danger is enhanced by the primitive and uncertain method (external pressure on rubber tubing) by which the flow of fluids into the patient is apt to be encouraged. It is a complication that readily occurs in young children with their small circulat-

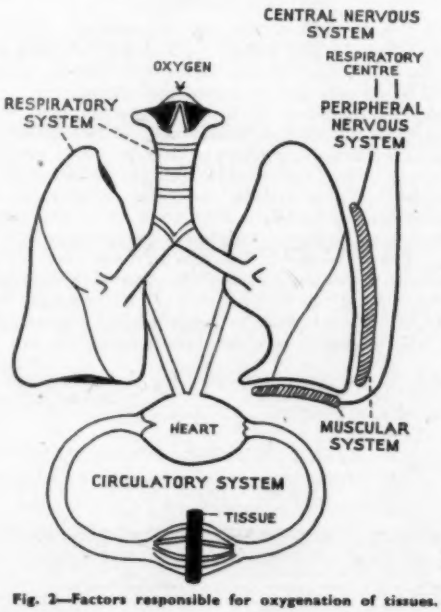

Fig. 2—Factors responsible for oxygenation of tissues.

ing blood volume. The compromise between too little and too much can be achieved only by careful and continued supervision of the drip. Too often this supervision is left to the nurses, who lack the experience and basic knowledge which the safety of the child demands; and furthermore it is not their responsibility.

Minute Pulmonary Ventilation

The tension and the volume of oxygen in the lungs depend on the summation of the rate and depth of breathing. This depends on the integrity of the respiratory centre, and the efficiency of the respiratory muscles. After a burn there is central stimulation due to pain and fear. The rate of breathing is increased without a proportionate increase in the depth. This rapid shallow breathing is particularly common in children with burns involving the chest and abdomen. By the relative increase in the dead air volume and the speed at which air is being drawn through the narrow tracheobronchial tree this type of breathing is inefficient, obstructive, and exhausting to the child. The child must be given relief through the careful administration of opiates. Further precautions must be taken to ensure that the harmful effects are not exaggerated by the application of heavy blankets or constricting bandages, and that the high Trendelenburg position does not interfere with free intercostal and diaphragmatic movements.

Opinions differ about the value of oxygen in the treatment of shock. The claims for oxygen therapy, however, can never be dismissed lightly, since time and again in the course of one's duties its undoubted value has been experienced. In this unit oxygen is given routinely to children with burns involving more than 30% of the body-surface, and to any child in whom there is evidence of a reduction in the pulmonary ventilation and of peripheral circulatory failure. High concentrations of oxygen increase the volume and tension of oxygen in the pulmonary alveoli and, used as a therapeutic adjuvant, tide the patient over a period of acute anoxia while efforts are being made to correct the deficiency in the circulating-blood volume. Its value depends on a clear airway (oxygen can neither correct nor surmount an obstructive barrier) and the care with which the apparatus is connected and maintained. Too often one sees the oxygen cylinder, with its connections carelessly fitted, fizzing away uselessly; or the thin rubber tubing conducting oxygen to the patient may be kinked as it leaves the cylinder and arches over the bed-head; or a perished nose-piece, with harness inaccurately adjusted, is collapsed and twisted and obstructs the patient's airway. Worst of all, the humidifier may be incorrectly fitted, when water will be siphoned into the lungs.

Oxygen is best given to children through an intranasal catheter with several holes in its terminal inch to disperse the gas and to prevent the gas from impinging constantly against one spot. The tube should be lubricated with analgesic ointment and strapped over the nasal bridge and forehead, leaving sufficient slack to allow free movement of the child's head.

Oxygen is delivered through a humidifier at a flow-rate of 2–3 litres a minute, and once every 12 hours the tube must be removed and replaced through the alternate nostril.

Only if attention is given to every detail can one be certain that oxygen is being given as a therapeutic measure and not as a therapeutic gesture.

OXYGEN DEMAND

If the post-war years have taught anything, it is that when goods are scarce one must economise in their use. This simple economic law might be applied with advantage to the treatment of shock. In this state, as has been indicated, interference with the transport of oxygen restricts its supply to the tissues, and the demands of the tissues must be reduced accordingly. Consideration must be given to the handling of the patient and to the control of anxiety-restlessness.

TABLE IV—DOSAGE TABLE OF PREOPERATIVE AND POST-OPERATIVE DRUGS

Age (yr.)	Weight (kg.)	Quinal-barbitone sodium (gr.)	Atropine (gr.)	Diamorphine hydro-chloride (gr.)
Birth–1 ..	10	—	1/300	1/80
1–2 ..	13	3/4	1/150	1/80
2–3 ..	15	3/4	1/150	1/60
3–6 ..	20	1 1/2	1/150	1/40
6–9 ..	26	2 1/4	1/100	1/24

Handling of the Patient

This must be reduced to a minimum, only essential diagnostic and therapeutic measures being permitted. These measures must be taken with speed and precision by doctors and nurses versed in their intricacies. Skill and experience are required in feeding and in setting up blood-transfusion apparatus for a young child. These important measures cannot be left to an inexperienced nurse or houseman, who may labour for an hour or more, exhausting the child and themselves before calling for assistance.

Anxiety and Restlessness

These must be relieved. Care must be taken, however, before administering depressant drugs that restlessness is an evidence of pain and not visible evidence of the patient's fight to relieve tissue anoxia.

Sedative drugs must be used circumspectly, and their effect on the rate and depth of breathing must be carefully observed. Diamorphine hydrochloride is our drug of choice for children and is given, on admission, in doses based on the age (table IV), half the dose being given subcutaneously and half intravenously. The dose may be repeated 4-hourly.

Diamorphine hydrochloride may seem an unusual drug to select. It has been used routinely in this hospital for many years as a postoperative sedative, and it was a natural choice in burnt children. The reputed respiratory depressant effect of diamorphine hydrochloride, however, with the threat of anoxia encouraged investigation of the potentialities of morphine and the barbiturates. Neither gave satisfaction. Idiosyncrasy to morphine is not uncommon in children, making it unsuitable for routine use, and its respiratory depressant effect appeared more pronounced than that of diamorphine hydrochloride. The barbiturates (quinal-barbitone sodium and phenobarbitone), as might be expected, excited rather than depressed the child in pain, and their repeated administration exerted a cumulative effect with prolonged and undesirable drowsiness.

On occasion a seriously burnt child has received an overdose of opiate before admission. An infant, aged 3 weeks, admitted to this unit had been given gr. 1/8 of morphine. The pulmonary ventilation volume, in such a case, may be reduced to a dangerous level, and it may be necessary to assist the child's breathing. Oxygen is given through an endotracheal tube, if necessary, by rhythmic manual compression of the rebreathing bag of an anæsthetic machine, until the patient can actively maintain adequate ventilation.

Pre-anæsthetic Assessment

The general disturbances effecting and resulting from oligæmic shock having been corrected and brought under control, consideration must next be given to the local treatment of the burn. This treatment varies from the application of a simple dressing to extensive cleansing and grafting. It therefore becomes necessary to assess the capacity of the patient to meet these operations. If this assessment is to be made with any degree of accuracy, the anæsthetist must be aware of the following factors:

(1) The clinical state of the patient.

(2) The nature of the operation, its benefits to the patient, and the metabolic and physiological disturbances associated with it.

(3) The hazards of the particular anæsthetic technique required to provide satisfactory operating conditions for the surgeon.

(4) The capability or, possibly more important, the limitations of the surgeon and the anæsthetist.

Just as the preparation of a burnt child is directed towards easing the burden on the respiratory and cardiovascular systems, so the assessment of the burnt child depends on the functional efficiency of these systems. This assessment can be made only on clinical grounds. Special investigations and reports by non-clinical departments, although informative in a later review of the case, are necessarily delayed and often confusing, and their importance tends to be overemphasised. The seriously burnt patient cannot be assessed from a single clinical examination, since the response of a shocked child, and the manner of his response, to restorative measures and replacement therapy can vary from hour to hour. The clinician should rely on frequent bedside observations: the colour of the skin and mucosæ, the temperature of the skin, the feel of the pulse, the capillary-filling time, the rate and rhythm of breathing, and the dryness of the tongue and lips—attempting by experience to acquire something of the clinical perception of the physicians of yesteryear.

The clinician anæsthetist accompanies the surgeon on his repeated visits from the time of the child's admission to hospital, and from observations must be prepared to discuss, at any time, the advantages or dangers to the patient of whatever operation the surgeon may consider advisable.

The early local treatment of burns—cleansing and the application of dressings—presents few problems to the anæsthetist. The immediate threat of shock has been relieved, and these operations can be done under diamorphine hydrochloride, or the patient can be given low concentrations of cyclopropane, the gas being used as a form of controlled sedation.

Later, usually between the 10th and 14th days after a burn, sloughs begin to separate, and a decision must be made about the best time for excising the eschar, whether extensive excision and grafting of the raw surfaces should be done, or whether the burnt area should be treated piecemeal.

After extensive deep burns the patient's condition may begin to deteriorate between the 7th and 10th days. The child becomes feverei and chesty, with a rapid pulse, or, as has happened in three cases in this unit, becomes hypopyrexial, disoriented, and later comatose. It is just such patients, however, who benefit most from heroic, rather than conservative, measures. The anæsthetist must be sufficiently informed on the benefits of this action to advise the surgeon on the child's ability to stand the stress of extensive surgery, and whether the anticipated blood-loss can be replaced by immediate blood-transfusion or prevented by using a hypotensive drug.

The custom of referring seriously ill patients to physicians for preoperative assessment is to be deplored. Any member of a surgical team should be better equipped to advise than a physician, who is ill-informed on many of the essential physiopathological upsets. The custom is less common than it was; but physicians, from time to time, with an enviable disregard for the hazards of anæsthesia, record as their considered opinion that a seriously burnt child will survive an operation of uncertain nature, providing a non-toxic agent, such as nitrous oxide, is used.

I submit that the anæsthetist to the surgical team is best equipped to advise on the resultant of the four variables mentioned above. He is familiar with the hazards of anæsthesia. His training has taught him to appreciate the effects on the patient of blood-loss and surgical trauma associated with particular operations. He knows, none better, the capabilities of his surgeon.

Pre-anæsthetic Medication

Atropine is given to all patients in a dose proportional to the age of the patient. Children tolerate relatively large amounts of atropine and rarely show the dry uncomfortable-looking buccal and labial mucosa so characteristic of the atropinised adult.

In the weeks immediately following a severe burn repeated anæsthetics are necessary to permit dressings and grafting operations. During this period too the basal metabolic rate rises rapidly and may remain raised for several months. This necessitates a nutritional intake well above normal requirements, and from the 2nd day onwards it is the custom, in this unit, for children to be put on a carefully planned diet. Recovery from anæsthesia must be rapid and uncomplicated if interference with this dietetic régime is to be avoided. The anæsthetist should aim at having the child awake within minutes of completion of the dressing or operation, so that food may be given within an hour or two of his leaving the operating-theatre. For this reason preoperative sedation is rarely used. This is contrary to the expressed opinion of psychiatrists, but experience has given little support to their anxious forebodings. Despite, or possibly because of, repeated anæsthetic experiences the child is surprisingly coöperative, appears to welcome the frequent visits to the theatre, and, with the anæsthetic technique detailed below, goes to sleep rapidly and quietly.

The occasional child who refused to become emotionally reconciled to visiting the theatre is given quinalbarbitone sodium by mouth (for dosage see table IV). This drug usually puts the patient to sleep and, because of the rate at which it is metabolised, recovery from its effects is fairly rapid.

Should an operation be necessary in the period immediately following a burn, the child is controlled with diamorphine hydrochloride. At this time metabolic requirements are satisfied by parenteral administration.

The hæmoglobin level must be estimated preoperatively and any anæmia corrected. For grafting operations, during which the removal of skin and the excision of granulations will cause blood-loss, it is essential that a blood-transfusion should be given in the immediate preoperative period and again during the operation to replace any loss.

Anæsthetic Technique

Once upon a time an inspired surgeon must have attributed the unfortunate death of one of his patients to his (the patient's) failure to "stand the anæsthetic." Since then this aphorism has been to the surgeon what enlargement of the thymus has been to the anæsthetist, and a surgeon, before subjecting a seriously ill patient to a lengthy and hazardous surgical operation, is often heard to ask the anæsthetist to examine the patient and report on his fitness to "stand the anæsthetic."

A review of the literature on anæsthesia, however, would almost certainly show that it is not the seriously ill patient who is likely to die from an anæsthetic but the robust healthy child who has been badly prepared. Further investigation would show that these deaths could invariably be attributed to some avoidable indiscretion on the part of the anæsthetist. The seriously ill patient appears to be unusually resistant to the hazards of anæsthesia and occasionally appears to be in better condition after the operation than he was before.

This paradox is explained by the fact that the seriously ill are normally anæsthetised by experienced anæsthetists. They are less resistant to the effects of anæsthetics, and satisfactory operating conditions may be induced

and maintained with relatively small amounts of anæsthetics. In addition, modern anæsthetic techniques, far from being a danger to the patient, embrace the essentials of resuscitative therapy: rest, positioning, oxygen, blood-transfusions, &c.

Under anæsthesia the patient is at complete rest; the airway is carefully maintained; oxygen is given in high concentration and with positive pressure if necessary; rate and depth of breathing are maintained at optimal levels; the pulse, colour, and blood-pressure are continually observed and their significance interpreted; blood is given where necessary to replace loss during extensive grafting operations, and the rate of the transfusion is regulated to satisfy the immediate needs of the patient.

The seriously burnt child, to whom these restorative measures are so vitally important, shows benefit from this concentrated attention and, providing the surgical operation is completed without unnecessary surgical trauma, appears in better clinical condition after the operation.

Anæsthetic Agent

It is impossible to dogmatise on the best anæsthetic agent for a burnt child. Indeed the flood of literature emanating from different centres and extolling the virtues of particular drugs for similar operations must be very confusing to the casual anæsthetist and neutral observer. The truth is that the patient's safety does not depend on the pharmacology of an anæsthetic drug so much as on the skill and experience of the anæsthetist administering it, combined with careful preparation and the meticulous application of whatever anæsthetic technique is decided on.

Anæsthetic drugs are used essentially to provide satisfactory operating conditions, which, in similar operations, vary with individual surgeons. One may be able to work competently with a lightly anæsthetised patient where another would require, and demand, the curarised, pulseless, apnœic, anthropomorphous mass popularised by the modern anæsthetist.

Fortunately, in burns, the requirements of the surgeon are few. All he asks is a quiet patient and access to the burnt areas. It is possible, therefore, for the anæsthetist to concentrate on the demands of the child. These are as follows:

(1) A rapid smooth induction free from coughing, struggling, and crying, which exhaust the child and stimulate the formation of obstructive secretions.

(2) A high concentration of oxygen to satisfy the therapeutic and increased metabolic demands of the burnt child.

(3) Quiet breathing.

(4) Minimal disturbance of metabolic and physiological functions. The surgical team has already spent many hours attempting to correct the upset caused by the burn.

(5) Rapid recovery to allow full and early expansion of the lungs, and rapid resumption of the dietetic régime.

Cyclopropane is well suited to meet these demands of the child. It may be given with high concentrations of oxygen and, being excreted unchanged, produces minimal upset of the body chemistry. Its central depressant effect ensures quiet breathing; but most important is that it is a gas. Absorbed and expelled through the lungs it allows the anæsthetist to control not only its administration but also its excretion. This, combined with the fact that cyclopropane is a powerful non-irritant agent capable of taking a child from consciousness to respiratory arrest in 60–75 seconds, makes it the most flexible and controllable of agents, permitting rapid smooth induction, easy maintenance, and return to consciousness before leaving the operating-table. Feeding may be resumed 2–3 hours later.

Method of Administration

Cyclopropane is administered with circle absorption or, in the very young (aged less than 3 years), with a to-fro absorption.

TABLE V—ENDOTRACHEAL TUBES: DIMENSIONS OF MAGILL ORAL TUBES

Dimension	Age (yr.)						
	2/12	9/12	1½	3	5	9	12
Size no. ..	00	0	1	2	3	4	5
Length (cm.) ..	10–11	11–12	12–13	13–14	15–16	17–18	18–19
Ext. diam. (mm.)	4·3	5·6	6·0	6·6	7·6	8·3	9·0

Rapid induction to surgical anæsthesia is achieved after five or six breaths (30–40 seconds) by giving high concentrations of cyclopropane, the proportion of cyclopropane to oxygen being 3 to 1, and anæsthesia is maintained with a flow-rate of cyclopropane: oxygen 1:3 (50–100 c.cm. of cyclopropane: 300 c.cm. of oxygen). When the dressing is applied, the cyclopropane is turned off, and after one or two breaths of oxygen the mask is removed.

Endotracheal intubation is used as an aid to the administration of cyclopropane in the following conditions:

(1) Burns involving the face, head, and neck, if the surgeon is to have reasonable access to the parts.

(2) Burns involving the dorsal surfaces, when positioning the child makes it difficult to maintain a clear airway.

(3) Any child in whom respiratory embarrassment, even though minor, persists and cannot be relieved by either manipulation or the use of an oral airway.

It has been suggested that the introduction of an endotracheal tube narrows the already narrow trachea of a child to a degree which itself causes respiratory embarrassment. This premise stimulated the corollary that the largest possible tube should be used and has led anæsthetists to "screwing" into the trachea uncomfortably large lubricated tubes. I believe, despite assertions to the contrary, that it is the maintained pressure from such tubes that initiates the formation of membranes and post-anæsthetic laryngeal œdema reported recently. The tube sizes detailed in table v are proportionate to the size of the child; they ensure an undisturbed airway and lie comfortably within the larynx. With such tubes these dangerous complications do not develop. Gentle handling is necessary in introducing the tube, particularly in the ill-nourished child with infection of the oropharynx; but, provided the tube is introduced atraumatically, I have not found that these factors predispose to laryngeal œdema.

It is unnecessary to lubricate the tube. Even although atropine has been given, the slimy moistness of the child's laryngeal mucosa allows it to slip easily and atraumatically into the larynx.

In children aged less than 8 years the vocal cords appear to mould themselves round the tube, and an airtight fit is obtained without a pharyngeal pack.

This anæsthetic technique has been used routinely during the past eight years to anæsthetise children with burnt areas ranging from a slight extent to 60–70% of the body-surface. The results have been most satisfactory. The only complication during administration has been an occasional bronchospasm, which may be dangerous if not recognised early and rapidly relieved by the application of steady manual pressure to the rebreathing bag filled with oxygen. Cardiac irregularities associated with the use of cyclopropane in adults are rarely observed, and there have been no cases of postoperative atelectasis.

I wish to thank Mr. A. B. Wallace, F.R.C.S.E., for encouragement and help in writing this article.

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THE TREATMENT OF GENITO-URINARY TUBERCULOSIS

A REVIEW OF 240 PATIENTS

J. COSBIE ROSS
Ch.M. Lpool, F.R.C.S.
SURGEON, ROYAL SOUTHERN HOSPITAL, LIVERPOOL

J. G. GOW
F.R.C.S.
UROLOGICAL SURGEON, WRIGHTINGTON HOSPITAL

C. A. ST. HILL
M.B. Brist.
PATHOLOGIST, ROYAL SOUTHERN HOSPITAL, LIVERPOOL

APPROXIMATELY five years ago we commenced an investigation of genito-urinary tuberculosis, an investigation based on a unit of 35 beds devoted to this disease at Wrightington Hospital. Previous communications (Cosbie Ross, Gow, and St. Hill 1951, 1953), together with more recent papers in the *British Journal of Urology* (Ross 1953, Gow 1953) have recorded our earlier experiences. The total number of patients treated now amounts to 240, and in this paper we report a new series of 85 and review the earlier groups amounting to 155. We have had the advantage of following up all our previous cases, some of whom first commenced their treatment five years ago. The follow-up has been carried out with great thoroughness and includes cystoscopy, intravenous and retrograde pyelography, and guineapig inoculation at first six-monthly and later at yearly intervals. This has naturally entailed a great and increasing volume of work, but the results have been both interesting and encouraging. The careful follow-up is necessary, not only because of the possibility of tuberculosis developing in another system or organ, but also because a small proportion of the urines may become positive again at the end of two or more years.

It can be said at once that the prognosis has greatly improved as a direct consequence of adding chemotherapy to surgery and sanatorium treatment. During the first half of this century, using surgery with or without a sanatorium régime, the mortality was approximately 50%. Surgery and the sanatorium are still necessary today in the treatment of this insidious disease, but the addition of chemotherapy has reduced the mortality to 10%, and the figure is being improved year by year. Our figures include all cases, no matter how advanced or extensive, since all patients with proven genito-urinary tuberculosis are accepted by the unit. Before chemotherapy some of these patients would have been regarded as beyond hope, and given palliative treatment only.

The classification which we use is as follows:

Type 1: early minimal lesion of renal parenchyma.
Type 2: unilateral renal lesion with cystitis and nephrectomy or partial nephrectomy.
Type 3: bilateral renal lesion with cystitis and nephrectomy or partial nephrectomy.
Type 4: cystitis and involvement of the remaining kidney after nephrectomy.
Type 5: (*a*) major bilateral renal disease.
(*b*) minor bilateral renal disease.

This is the classification suggested by Jacobs and Borthwick (1950) but with an additional category of "minor bilateral disease." Even in this modified form the classification is not perfect, but in practice it appears to cover most of the possibilities.

We have continued to use thiosemicarbazones in addition to streptomycin, isoniazid, and *p*-aminosalicylic acid (P.A.S.), although in other centres this policy has not received support. We have been encouraged to do so by a statement by Domagk in a recent lecture that strains of tubercle bacilli which are resistant to streptomycin and isoniazid frequently respond to thiosemicarbazone.

Patients Treated Since July, 1952

This group consists of 85 patients (58 males and 27 females). 43 presented with renal lesions only, and in 42 the renal lesions were combined with pulmonary lesions, or bone and joint lesions, or both.

The chemotherapy used (Gow 1953) is briefly as follows:

Streptomycin 2 g. daily, intramuscularly, in 1 dose
Isoniazid 250 mg. daily, orally, in 1 dose
} administered for fourteen days

Thiosemicarbazone 100–150 mg. daily, orally, in divided doses
Calcium benzoyl P.A.S. 7 g. t.d.s.
} also administered for fourteen days

The two combinations are alternated for a period of at least six months.

Toxicity

Transient toxic manifestations were caused by streptomycin in 22 cases, by thiosemicarbazone in 11 cases, and by P.A.S. in 6 cases. There were no toxic reactions to isoniazid.

Toxic reactions to streptomycin occurred in 25% of cases treated, but were always mild and seldom necessitated withdrawal of the drug. The main complaints were dizziness and tinnitus, both of which disappeared a few weeks after the course had been completed. Toxic effects occurred usually towards the end of the course, but if they developed earlier desensitisation was carried out by combining the streptomycin with one of the anti-histamine drugs ('Phenergan'). In this way it was possible to give all patients a complete course.

Toxic symptoms due to benzoyl P.A.S. consisted in nausea and vomiting, and in 3 patients the drug had to be discontinued. Fortunately these 3 patients tolerated the original preparation of P.A.S.

In a few cases the full dose of thiosemicarbazone had to be reduced to 50 or 100 mg. a day because of depression and anorexia.

SURGICAL MEASURES

As we have already emphasised, surgery is as necessary today as before the advent of chemotherapy. In fact, surgical measures will remain necessary as long as resistant strains continue, and as long as chemotherapy fails to produce radiographic healing of an ulcerocavernous lesion. In our series any improvement in the appearance of the pyelogram has been the exception rather than the rule.

However, operative treatment should not be begun until the patient has had an adequate period of chemotherapy. This will ensure smooth convalescence and, more important, enable wounds to heal by first intention. This "staging" of surgical measures carried out under a screen of chemotherapy has almost eliminated the breaking-down nephrectomy wounds of previous years.

Nephrectomy

This operation was carried out in 37 cases. In comparing this figure with the total of 85 it should be remembered that there was a certain number of cases of tuberculous bacilluria (type 1) and in a few nephrectomy had been done before the patient came under our care.

Our indications for nephrectomy included:

(*a*) A non-functioning kidney.
(*b*) A disintegrated kidney.
(*c*) Two focal lesions not located in one pole.
(*d*) An ulcerocavernous lesion in the middle calyx, or in a polar calyx and encroaching on the hilum.
(*e*) "Putty" kidney. There is no such condition as "autonephrectomy," and these caseous sacs invariably reveal apparent active disease when sectioned (Hanley 1952).

In all these cases the other kidney was normal, or had only a minor lesion.

We have generally found that extensive calcification in a kidney necessitates its removal, because the urine from the calcified organ remains potentially positive.

Partial Nephrectomy

This operation has been made possible only by chemotherapy. Its advantages over total nephrectomy need no elaboration. In particular, it enables bilateral surgical measures to be undertaken. We have carried out partial

nephrectomy in 7 cases in the present series, the operation consisting in removal of the upper or lower pole, or of the removal of the affected part in a double kidney. Several of our patients have had bilateral partial nephrectomy. In none have we removed the middle calyx, but it has been shown that this also can be done. It is, of course, possible to remove an ulcerative lesion and to miss by millimetres an adjacent focus; but, as Semb (1953) has pointed out, if the locally destructive lesion is removed the infiltrations usually heal with chemotherapy.

The principal indication for partial nephrectomy appears to be an ulcerative lesion of a polar calyx or a localised calcified area combined with a persistently positive urine from the same ureter. After partial or complete nephrectomy, our practice is to close the wound without drainage.

Transplantation of Ureter

We have always been very reluctant to carry out this procedure, and it appears to be less often necessary now than during the earlier years of our investigation. In some cases a note has been made at the initial cystoscopy that, owing to the state of the bladder and the severity of the frequency, transplantation of the ureter into the colon would probably be needed later; but usually the improvement in the frequency and the degree of the bladder healing has made this unnecessary.

This is not always so, however, especially where the interstitial cystitis is pronounced. We have carried out a transplant on 5 occasions in the present series, and there is no doubt that in selected cases the operation has been fully justified. When the lower two-thirds of the ureter has been extensively diseased we have not hesitated to implant the upper third into the descending colon or the hepatic flexure; in each case this has been successful. Renal acidosis has been encountered on several occasions, and is nearly always due to neglect on the part of an uncooperative patient. When the simple rules, involving the constant use of an alkaline mixture and a salt-free diet, are combined with periodic analysis of the blood chemistry, little trouble has been encountered. When there is a progressive hydronephrosis from stricture of the lower end of the ureter, we prefer to implant the dilated lower end of the ureter in the fundus of the bladder, provided the condition of the bladder is satisfactory.

We have carried out nipple ureterostomy (Band 1950) in some of these intractable cases. Theoretically nipple ureterostomy is attractive, because it removes the twin dangers of ascending infection and renal acidosis; moreover, an efficient apparatus for collecting the urine can now be provided. But, while acknowledging its possible value in other conditions (e.g., cauda-equina lesions), we cannot recommend ureterostomy in renal tuberculosis. If the ureter is diseased, as is likely in patients in whom urinary diversion is indicated, ulceration and fistula-formation occur at the base of the skin nipple. We have therefore abandoned this procedure.

Epididymectomy

Tuberculous epididymitis is common, and nearly a third of our patients had genital lesions. We have been impressed by the large numbers of patients with a tuberculous epididymitis combined with type 1 renal lesion.

Epididymectomy is apparently not now required as often as it was two or three years ago. It was performed on only 7 of our 85 patients. The operation is, however, still necessary when caseation and abscess formation are present, and especially if the vas is involved. If the epididymis feels hard or fibrotic it may be safely left, since non-operative treatment will probably be effective. Orchidectomy has not been included in our list of operative procedures, because we feel very strongly that this mutilating operation should not be performed unless the circumstances are quite exceptional. It is not an urgent matter to remove the epididymis, and, especially if there is a large confluent inflammatory mass, there is every advantage in postponing the operation for three or four months while the patient is in the sanatorium receiving a course of chemotherapy. If patience is exercised, sufficient improvement will be achieved to enable the operator to find a plane of cleavage between the body of the testis and the epididymis. The technique (Ross 1948) involves the extrusion of the testis through a scrotal incision, the careful preservation of the blood-supply of the body, and the bringing out of the stump of the vas through a small stab incision over the external ring.

RESULTS

These have been assessed under the following headings: (1) sterilisation of the urine, (2) clinical improvement, and (3) cystoscopic improvement.

Urine

All were guineapig-positive before treatment was begun, and of the 85 patients no fewer than 80 achieved a stable negative. 5 were unstable, but none was persistently positive (table I). 5 had reverted to positive at the end of six months (the longest follow-up possible in this group up to the present time). The tubercle bacilli isolated from all positive cultures or guineapig inoculations were tested for sensitivity to streptomycin and isoniazid: no strains resistant to streptomycin or isoniazid were isolated.

TABLE I—FOLLOW-UP OF 85 CASES

Type	No. of cases	Urine			
		Positive after two months	Positive after four months	Positive after six months	Reverted to positive after six months
1	28	0	1	1	1
2	34	4	4	1	2
3 and 4	14	3	0	0	0
5	9	2	1	0	2

1 patient died from advanced pulmonary disease about six months after leaving hospital.

For some time we have considered the period of six months' chemotherapy to be insufficient—a view which is held by various Scandinavian authorities (Ljunggren 1953). Accordingly, we now give in addition a modified course, lasting three to six months, after the patient leaves hospital. This "post-sanatorium" course is given by the patient's own doctor, and consists of:

Streptomycin 2 g. intramuscularly
Isoniazid 250 mg. orally } twice a week, together with
Calcium benzoyl P.A.S. 5 g. orally three times a day.

Clinical Improvement

We have attempted to judge the clinical improvement by the degree of frequency of micturition and nocturia, and by the gain in weight. Of the 61 patients who originally complained of frequency and nocturia, 57 were considerably improved, but 4 ultimately required ureterocolic transplant for intractable bladder symptoms. 72 patients put on weight, the average gain being approximately 1 stone.

Cystoscopic Improvement

Of the 85 patients, 60 had tuberculous cystitis or tuberculous granulations, and many had both. Of these, 50 showed improvement, and in 30 the bladder returned to a normal appearance. Of 34 with a reduced bladder capacity, a considerable increase was recorded in 32.

As in the past, we have not seen any improvements in the radiological appearance in the present series.

Follow-up of Patients Treated Prior to July, 1952

93% of the patients treated since 1949 have been followed up (table II). Our aim is to keep as many

TABLE II—RESULTS OF FOLLOW-UP

Year	No. of patients	Died	Given further course of treatment	Positive at end of treatment	Reverted				Not followed up
					After 1 year	After 2 years	After 3 years	After 4 years	
1949–50	51	8 following transplant 1 advanced pulmonary disease 1 severe bilateral renal disease	3	9	2	2	3	4	2
1950–51	47	2 following transplant 2 meningitis 1 advanced pulmonary disease	1	12	5	1	2	1	6
1951–52	27	1 severe bilateral renal disease	2	1	2	2	1	0	2
1952–53	30	2 severe bilateral renal disease	2	1	6	2	0	0	1
Total	155	18 (11·6%)	8 (5·1%)	23 (14·9%)	15 (9·7%)	7 (4·5%)	6 (3·9%)	5 (3·2%)	11 (7·1%)

patients as possible under constant review for ten years from the start of treatment.

ANALYSIS OF URINARY INVESTIGATION SINCE 1949

During the present period further efforts have been made to improve our methods for isolating tubercle bacilli from urine. In previous investigations we had found that twenty-four-hour specimens did not yield a higher proportion of positive results than early morning specimens. In an attempt to improve the twenty-four-hour specimen results, the volume of urine from which a sediment was obtained after forty-eight hours' standing was increased, firstly to 250 ml. and secondly to 750 ml. Table III shows that increasing the volume of twenty-four-hour urine specimens did not increase the number of positive results. We believe that several factors account for this.

In the first place, twenty-four-hour specimens are collected at intervals in the ward and are open to many contaminants, including moulds and bacteria relatively resistant to the action of sodium hydroxide. Many specimens have accordingly to be treated twice with sodium hydroxide, which doubles the risk that the sodium hydroxide will kill the tubercle bacilli as well. Secondly, most twenty-four-hour specimens develop large amounts of phosphatic and other deposits, which impede the action of the sodium hydroxide, and lead to the production of bulky and unwieldy material for final inoculation. We have consequently abandoned using twenty-four-hour specimens, believing that the results from early morning

TABLE III—EFFECT OF INCREASING VOLUME OF URINE CENTRIFUGED

Vol. centrifuged	No. tested by artificial culture	No. positive	No. tested by guineapig inoculation	No. positive
100 ml.	441	20 (5%)	284	68 (24%)
250 ml.	230	16 (7%)	230	60 (26%)
750 ml.	419	28 (7%)	419	50 (12%)

specimens are equally good. The results of the first 200 early morning specimens have been compared with those of the preceding twenty-four-hour specimens (table IV). There was no significant difference between the early morning and twenty-four-hour specimen results, and the results from artificial culture were as good as from guineapig inoculation. It was noteworthy that the number of positive results obtained when the two methods were combined was consistently higher than when either method was used alone.

Sodium hydroxide, which we used to destroy contaminating organisms in our specimens, is reputed to kill tubercle bacilli as well as contaminants. We therefore incorporated chloramphenicol in the Löwenstein-Jensen medium, in the hope that it would suppress the growth of contaminants and do away with the need for using sodium hydroxide. All specimens from which no growth was obtained on a preliminary overnight culture on blood agar (containing 10 µg. of chloramphenicol per gramme of medium) were inoculated on to Löwenstein-Jensen media without any further treatment. We found that because of the lability of chloramphenicol 100 µg. had to be added to each gramme of Löwenstein-Jensen medium to suppress contaminants for six weeks. At this concentration, growth of the tubercle bacilli themselves was inhibited.

We therefore reduced the time that the sodium hydroxide (3%) remained in contact with the urinary deposits from twenty minutes to five minutes. We found that five minutes was long enough to decontaminate practically all our specimens, but that the proportion of positive tubercle bacillus cultures was not increased by the shorter time. From this it follows either that 3% sodium hydroxide is not lethal to tubercle bacilli immersed in it for twenty minutes, or that its lethal effect is not lessened by shortening the time of contact.

TABLE IV—COMPARISON OF CULTURE METHODS

Specimen	No. of specimens	No. positive by artificial culture	No. positive by guineapig inoculation	Combined no. positive
Early morning	202	19 (9·5%)	19 (9·5%)	28 (13·5%)
24-hour	419	28 (7%)	50 (12%)	54 (13%)

The technique we now employ is:

The early morning specimen is collected and sent immediately to the laboratory, where the whole of it is centrifuged for half an hour at 2000 r.p.m.; the deposit is treated with 3% sodium hydroxide at 37°C for five minutes, neutralised, centrifuged for twenty minutes, and the resultant deposit is inoculated on to two Löwenstein-Jensen plates and into a guineapig.

TREND OF RESULTS

The over-all figures for the proportion of successful isolations of tubercle bacilli from urinary specimens received during the last three years are given in table V. In the early stages the proportion of positive results was high: this was to be expected, for many specimens were from untreated cases. As the trial proceeded, the proportion of treated to untreated cases rose steadily, and this was reflected in the steady fall in the number of positive guineapig results. The proportion of positive results obtained by artificial cultures, on the other hand, did not diminish; consequently, while guineapig inoculation at first gave better results than artificial culture, eventually both methods gave very similar results. The explanation probably lies in the improvements which we made in our technique over the past three years: the tubercle bacilli in our final deposits are now in sufficient numbers to allow growth on artificial culture media as well as in guineapigs. Each method will of course occasionally fail, which explains why the combined results are better than those of either method taken individually (table IV).

TABLE V—RESULTS FOR LAST THREE YEARS

Specimen	No. tested by artificial culture	No. positive	No. tested by guineapig inoculation	No. positive
Early morning	765	82 (10·5%)	559	89 (16%)
24-hour	1297	78 (6%)	962	189 (19·5%)

Discussion

We have been concerned by the emergence of resistant strains of organisms in a small number of patients treated in earlier groups. In some of these the resistant organisms have been found when a previous course of treatment, often inadequate, has been given elsewhere. To avoid this difficulty we have for some years given the four drugs in pairs alternately for two weeks at a time (see above). By this means not only are resistant strains much less likely to occur but toxicity is reduced to a minimum. Further, it is now well established that isoniazid and streptomycin given together are much more effective than either given alone (Mackaness 1953). There is no place in the treatment of genito-urinary tuberculosis for prolonged administration of a single drug.

Recently there was reported the result of a clinical trial in the United States of America of an isoniazid derivative (H.P. 213). Although this new preparation is, weight for weight, slightly less active than isoniazid, it appears to be about one-tenth as toxic (Bavin et al. 1952, Katz et al. 1954). For patients who fail to respond to streptomycin and isoniazid, or who have become resistant to one or both drugs we have recently instituted an alternative course consisting of 1·5 to 2·0 g. of H.P. 213 combined with viomycin 2 g. a day. The combination is given for periods of a fortnight, alternating with fortnightly courses of thiosemicarbazone and calcium benzoyl P.A.S. Viomycin has been given with caution, because of its toxicity, but using the method of intermittent dosage we have not so far had any trouble. A careful watch for the appearance of albumin is especially important.

We have been encouraged to learn that other workers are advising long, intermittent courses of treatment for tuberculosis of other organs (Joiner et al. 1954). We have consistently advocated this policy for a number of years.

Contracted Bladder

Severe tuberculous cystitis may often heal completely, but may leave the patient with troublesome residual symptoms of frequency and nocturia due to a contracted bladder. Superficial cystitis heals well, but interstitial cystitis may leave a diminished capacity. Thornley (1954) suggested that cortisone might be useful in these cases, and we have therefore treated a small series with 1 g. of cortisone spread over a period of four weeks. 50 mg. was administered daily for two weeks, followed by 25 mg. daily till the whole gramme had been given. Only patients in whom the disease had been inactive for some time have been considered suitable for this form of treatment. So far results are not encouraging.

Progressive Hydronephrosis

In our experience patients with progressive hydronephrosis usually do not improve, and we have not had much success with such simple measures as ureteric dilatation (Lane 1954). It is often difficult to pass a ureteric catheter in these cases, and subsequently, at operation, we have found the lower third of the ureter embedded in a solid mass of fibrous tissue. When only the lower third of the ureter is involved it may be possible to implant the upper end into the bladder fundus. If, however, there is tuberculous cystitis, and if much of the ureter is involved, a ureterocolic transplant is best carried out.

Pregnancy and Genito-urinary Tuberculosis

Our present policy is to allow the pregnancy to continue, provided the renal disease is not widespread, and provided also that the lungs are not much involved. If the lesion is of minor degree a normal confinement is permitted, the chemotherapy dosage being reduced by half during the last few months of pregnancy. Frequent examinations of the urine for albumin are necessary, and it is advisable to carry out intravenous pyelography once or twice to make sure that the minor renal lesion shows no signs of spread. Should spread occur it is advisable to terminate the pregnancy forthwith.

Summary

We have continued our investigation of genito-urinary tuberculosis. Another 85 cases are discussed.

The 155 patients of our earlier series, some of whom began treatment in 1949, have been regularly followed up. The results are reviewed.

It was found that these patients had to be followed up indefinitely, since the urine reverted to positive within twelve months in 9·7% and within two years in 14·2%.

Further experience confirmed our belief that anti-tuberculous drugs should always be given in combination, and that the intermittent method of therapy offers great advantages.

Further experience also convinced us that the course of treatment should be continued up to a year, and even longer.

A new course was used in patients with strains of organisms resistant to the usual drugs.

By combining surgery and a sanatorium régime with modern chemotherapy, the prognosis has been greatly improved.

We should like to thank Mr. J. Dobson, consultant surgeon-superintendent, Wrightington Hospital, for his help and coöperation; Prof. D. T. Robinson, who was responsible for the guinea-pig-inoculation tests; and Smith & Nephew Research Ltd., for technical assistance and supplies of isoniazid, thiosemicarbazone, benzoyl P.A.S., and H.P. 213. We are grateful also to Mrs. C. Wilding, who carried out all the technical laboratory work, and to the medical research committee of the board of governors, Liverpool United Hospital, who have provided one of us (J. G. G.) with a grant to assist this investigation.

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"... No one can prevent young people asking questions—the same awkward questions—of the generation that precedes it. My greatest hope, I think, lies in this restless searching for satisfactory answers that goes on in young people's minds before they lapse into the acceptance that tends to come with age, for by it truth can be reborn. Nothing can still this unquiet pulse. Between the ages of perhaps fifteen and twenty-five we question and establish our fundamental beliefs. In the future, I think we must somehow seize the exciting opportunity this gives. In the lifetime of each person this chance comes only once. Is it not possible to encourage in our youth a love of hardship, adventure, and effort, to give greater training in service and citizenship so that later a spontaneous awareness arises of problems at home and abroad, of religion and of politics? This enquiry may lead to one religion, to another religion, or even to no religion. It may lead to one political party, another political party, or to no political party. But at any rate I believe it will strengthen in all of us a conviction of the value of individual freedom, and unless we know its value we cannot defend it."—Dr. ROGER BANNISTER, *The Listener*, 1954, **52**, 1141.

CHRONIC BRONCHITIS

AN ATTEMPT TO CONTROL CHRONIC INFECTION WITH HÆMOPHILUS INFLUENZÆ BY AEROSOL THERAPY

KAY KNOX
M.B. Dubl., D.C.P.
REGISTRAR IN BACTERIOLOGY

P. C. ELMES
M.D. West. Reserve, B.M. Oxfd, M.R.C.P.
M.R.C. RESEARCH FELLOW

C. M. FLETCHER
C.B.E., M.A., M.D. Camb., F.R.C.P.
SENIOR LECTURER IN MEDICINE

POSTGRADUATE MEDICAL SCHOOL OF LONDON, HAMMERSMITH HOSPITAL

IN chronic bronchitis there is colonisation of the bronchial tree by nasopharyngeal bacteria (Stuart-Harris et al. 1953), which may be classified into two groups (May 1953):

(1) "Pathogens": pneumococcus, *Hæmophilus influenzæ*, *Staphylococcus aureus*, group-A hæmolytic streptococci, and Friedländer's bacillus.

(2) "Non-pathogens": *Streptococcus viridans*, non-hæmolytic streptococci, diphtheroids, *Neisseria catarrhalis*, and *Staph. albus*.

During the summer months and between exacerbations in the winter one or more of the "non-pathogenic" bacteria usually predominate in mucoid sputum, although pathogens may be present in small numbers. During this phase antibacterial drugs temporarily reduce the number of bacteria and of inflammatory cells (Elmes et al. 1953) but have very little clinical effect. During an exacerbation there is proliferation of one of the "pathogens," usually either a pneumococcus or *H. influenzæ*, and the sputum becomes purulent, but we have observed that this may follow the onset of clinical symptoms in some instances; hence the bacterial infection may be the consequence rather than the cause. Antibacterial drugs given during an exacerbation suppress the "pathogens," the sputum becomes less purulent, and there is usually clinical improvement.

Reid's (1954) pathological studies suggest that during these exacerbations, while the bronchioles are temporarily occluded, permanent damage may be caused to the lungs by extension of inflammation to the lobules. Presumably the bacteria concerned belong to May's "pathogen" group; therefore their suppression during an exacerbation should both reduce its length and severity and delay the gradual deterioration of lung function which is characteristic of this disease. Prophylactic treatment to prevent proliferation of these bacteria should be directed particularly against *H. influenzæ*, since the drugs to which it is sensitive will also suppress pneumococcal infections.

Systemic penicillin, in doses likely to be tolerated over long periods, encourages the proliferation of *H. influenzæ*. Of the "wide-spectrum" antibiotics chloramphenicol is the most effective against *H. influenzæ*; but its effect is only temporary, and long-term administration is precluded by its toxicity. Combinations of streptomycin and penicillin have been advocated by Mulder et al. (1952), but constant systemic streptomycin is impracticable for the treatment of large numbers of bronchitics apart from the danger of damage to the labyrinths from the doses needed. We therefore tried local therapy with streptomycin and penicillin in patients with chronic *H. influenzæ* infections to see whether such therapy could be applied effectively for long periods without serious complications, such as sensitivity to the drugs and a serious proliferation of insensitive organisms. Although theoretically promising, this method did not prove reliable in a pilot trial made on a small group of inpatients and outpatients, which is the subject of our present brief report.

Material

Details of the cases are given in table I. The three inpatients (cases 1–3) had been admitted with acute exacerbations of their chronic bronchitis and were found to have a predominant growth of *H. influenzæ* in their sputum. The six outpatients were not acutely ill when treatment was started but were less well than they had been in the summer. All were known to have had a predominant infection with *H. influenzæ* for at least a month, some for more than a year, and they had been under observation during the preceding winter. None had received chemotherapy within a month of the start of the trial.

Methods

Clinical Assessment.—With the exception of case 4, the outpatients attended weekly, and their condition was assessed by standard questions and clinical examination. Case 4 was seen less frequently but sent weekly specimens of sputum and progress reports.

Treatment.—The dose of penicillin G and streptomycin sulphate was dissolved in 1·5 ml. of 0·5% isoprenaline sulphate. This was dispensed in rubber-sealed bottles containing a week's supply and retained its potency at room-temperature over this period. The patients measured out the dose with a 2 ml. syringe and used an electrically driven 'Deedon' plastic inhaler with a face-mask. They were instructed to gargle and to wash their faces and hands after each treatment to diminish the risk of skin sensitisation. The inhalation usually took from fifteen to twenty minutes. All the outpatients were using a hand-spray to administer compound adrenaline and atropine spray (*N.F.*), when necessary, to reduce bronchospasm.

TABLE I—DETAILS OF CASES

Case no.	Age (yr.)	Sex	Grade of dyspnœa at best (Fletcher 1952)	Length of history (yr.)
Inpatients:				
1	74	M	4	30
2	67	F	4	11
3	63	M	2	35
Outpatients:				
4	61	M	1	54
5	64	M	1	20
6	56	M	2	5
7	57	M	3	15
8	62	M	4	20
9	60	M	4	15

Bacteriological.—The techniques of mechanical homogenisation, culture, and viable counting were those described by Elmes et al. (1953). Gutters for streptomycin-sensitivity testing contained 200 μg. per ml. of streptomycin, and the control organism was *Staph. aureus*. To facilitate the identification of *H. influenzæ* 0·2 unit of penicillin per ml. was incorporated in the chocolate-agar medium. The streptomycin level in the homogenised sputum was estimated by the method used by Mitchison and Spicer (1949) for serum and body-fluids. The lowest level of streptomycin which can be detected by this method is 1 μg. per ml. The method of Abraham et al. (1941) was used for the estimation of penicillin, except that agar seeded with the Oxford staphylococcus before pouring was used instead of a surface-inoculated medium.

Microscopical.—Sputum smears were prepared and analysed by the method described by Elmes et al. (1953).

Results

The inpatients were used to determine what dose of penicillin and streptomycin should be given by this method.

Inpatients

Case 1 was given penicillin 200,000 units and streptomycin 0·2 g. twice daily, and specimens of sputum taken four-hourly were cultured and tested for the presence of penicillin and

TABLE II—RESULTS OF TREATMENT

Case no.	Effect of treatment on *H. influenzæ* in sputum	Exacerbations: During treatment: No. and severity	Exacerbations: During treatment: Change in flora	Exacerbations: After treatment: Interval and severity	Exacerbations: After treatment: Change in flora	Previous winter
Inpatients:						
1	Eliminated	None	..	3 weeks moderate	*H. influenzæ* already present	1 severe
2	Slight reduction	None	..	3 weeks severe	*H. influenzæ* already present	1 severe
3	Eliminated	None	..	12 hr. severe	*H. influenzæ* returned later	None
Outpatients:						
4	None	1 mild	None	None	..	None
5	None	1 severe	None	None	..	1 severe*
6	None	1 mild	None	5 weeks moderate	Increase in no. of *H. influenzæ*	1 moderate
7	Temporary reduction	1 mild	None	3 weeks severe	None	1 mild, 1 moderate*
8	Eliminated	None	..	4 days moderate	Reappearance of *H. influenzæ*	1 mild, 2 moderate*
9	Eliminated for first 2 months, then returned to previous level	1 moderate	Pneumococcus appeared	10 days moderate	None	2 mild*
		1 moderate	None	..	..	..

* Despite courses of chemotherapy.

streptomycin. The sputum contained an effective level of penicillin (8 units per ml.) twelve hours after the start of treatment, but streptomycin was never detected. During the first three days *H. influenzæ* was found occasionally in the sputum; hence antibiotic cover was not being provided throughout the twenty-four hours of each day, but after the fourth day of treatment all the specimens collected before the morning treatment contained no *H. influenzæ*. By the end of the first day the sputum had become mucoid, and its volume fell progressively until, after the third day, it was only possible to obtain a small morning specimen. Treatment was continued for ten days. Five days later *H. influenzæ* reappeared in the sputum in large numbers, although the character of the sputum hardly changed and the patient's clinical condition continued to improve until the time of discharge a few days later. Seen as an outpatient a month later his condition had deteriorated and he was again coughing up large volumes of purulent sputum yielding a profuse growth of *H. influenzæ*.

Case 2 was too ill to coöperate well in taking the inhalations. On streptomycin 0·5 g. and penicillin 200,000 units twice daily the infection was only partly controlled. When the dosage was increased, the antibiotics tended to crystallise out in the inhaler, and the treatment became even less effective. The infection responded well to parenteral penicillin and streptomycin.

Case 3.—Despite a predominant growth of *H. influenzæ* this patient was producing a large volume of mucoid sputum when treatment was started with penicillin 500,000 units and streptomycin 1 g. twice daily. Initially difficulty was caused by drugs crystallising out in the vehicle, but this was prevented by adding distilled water. After this had been done, *H. influenzæ* disappeared from the sputum, which decreased in volume and became less cellular. The treatment was maintained for twelve days, during the last four of which *Pseudomonas pyocyanea* appeared in the sputum in moderate numbers without any clinical or microscopic change. Within twelve hours of the last treatment the patient developed pyrexia and increasing dyspnœa, but it was not until three days later that his sputum became purulent and *H. influenzæ* reappeared. He was by then desperately ill, was treated with chloramphenicol, cortisone, and 'Alevaire,' and recovered. Eosinophils did not appear in his sputum until he had been on cortisone for three days; therefore it is unlikely that the exacerbation was due to sensitivity to the aerosol. There was no change in this patient's agglutination titre to the common pathogenic respiratory viruses at this time. (The test was made by the Virus Reference Laboratory, Colindale.)

Outpatients

It was decided to give the outpatients penicillin 400,000 units and streptomycin 0·4 g. in 1·5 ml. of vehicle twice daily.

The results are summarised in table II, which shows that *H. influenzæ* was satisfactorily eliminated from the sputum only in case 8, who was also the only patient free from exacerbation of his bronchitis during treatment. His sputum always contained large numbers of polymorphs but was not grossly purulent. His relapse immediately after the cessation of treatment was associated with the reappearance of large numbers of *H. influenzæ* in his sputum, indicating that this infection had been suppressed rather than eradicated. He responded to a further course of penicillin and streptomycin inhalations but relapsed again when this was stopped.

An exacerbation was defined as a sudden clinical deterioration with pyrexia and breathlessness causing the patient to stay in bed for two or more days. Such exacerbations developed during treatment in all the other outpatients, but only one (case 9, first exacerbation) was associated with a change in flora. This took place when *H. influenzæ* could not be cultured from the patient's sputum and when his inhaler was out of order; it was associated with the proliferation of a pneumococcus and responded to further inhalations and parenteral penicillin.

All the other exacerbations took place while *H. influenzæ* was present in the sputum although not necessarily in large numbers. Since *H. influenzæ* did not proliferate significantly with the exacerbations it seems unlikely to have been the cause.

Bacteriology

Total viable counts on the specimens from the inpatients in whom the treatment was effective showed a reduction from 10^8 to 10^4 bacteria per ml. in case 1, and to zero in case 3. This reduction lasted about three days, and then the total count increased rapidly to the pre-treatment level, even though the pathogen was still absent. Viable counts on the outpatients done weekly for the first two or three weeks showed no significant change and were not continued. There was no significant change in the flora other than those mentioned above.

Microscopy

As in our previous study, the microscopical findings in the sputum showed a good correlation with the clinical state of the patient. During exacerbations the polymorphs and deoxyribonucleoprotein fibres increased at the expense of the mucoprotein; but, when the sputum was mucoid between exacerbations, although it might contain no deoxyribonucleoprotein fibres, the neutrophil polymorph was still the most numerous cell. Eosinophils were present from time to time in the sputum of all the patients but seldom in greater proportion than 5% of the total cells present; their presence was not correlated with any clinical symptom or sign.

Side-effects

No evidence of either cutaneous or bronchial allergy developed in any of the patients although there were occasional breaks in therapy of up to a week due to mechanical failures. No disturbance of gastro-intestinal function nor any other side-effect was noted. The patients found the inhalations tasteless.

Conclusions

Our conclusion is that our method of administering penicillin and streptomycin as an aerosol cannot be relied on to control bronchial infection by *H. influenzæ*. Furthermore, even the one case in which the infection was controlled for as long as six months relapsed immediately after the treatment was stopped. The reason for the failure of the method in five out of six patients is not clear, because the persistant organisms retained their original sensitivity to penicillin and streptomycin. Perhaps the uneven distribution of an inhaled aerosol in emphysematous patients permits foci of infection to persist in parts of the lung to which the aerosol does not penetrate.

Our observations support the view that *H. influenzæ* is of importance in severe chronic bronchitis. We have already shown (Elmes et al. 1953) that patients infected by this organism appear more susceptible to the effects of fog than those without it, and in our present small series only the patient whose infection was controlled escaped an acute exacerbation while the treatment continued. The exact rôle of *H. influenzæ* in chronic bronchitis remains obscure. Although exacerbations occur more frequently when it is present, they are not always associated with proliferation of *H. influenzæ*; nor does a proliferation of this organism necessarily cause a clinical exacerbation.

Summary

An aerosol of penicillin and streptomycin was used in an attempt to suppress *H. influenzæ* infections in nine patients with severe chronic bronchitis.

It was successful in three of them with clinical benefit. In the others *H. influenzæ* persisted in the sputum, and they had winter exacerbation of their bronchitis.

The bacteriological and clinical findings are described.

We wish to thank Dr. S. Sherlock and Dr. R. I. S. Bayliss for permission to treat their inpatients; members of the staff of the departments of medicine and bacteriology who made some of the observations when we could not do so; Miss M. Burton for preparing the solutions for inhalation; and Moore Medicinal Products Ltd. for the loan of the electrically driven Deedon inhalers.

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HEART-FAILURE FROM RETENTION OF SALT AND WATER CAUSED BY TREATMENT WITH PENTAPYRROLIDINIUM BITARTRATE

VAGN RØNNOV-JESSEN *
M.D. Copenhagen

ASSISTANT PHYSICIAN, FREDERIKSBORG COUNTY CENTRAL HOSPITAL, HILLERØD, DENMARK

DURING the past fifteen months we have been treating with pentapyrrolidinium bitartrate ('Ansolysen'), usually by mouth, about 100 patients with severe hypertension. The results much resemble those obtained by Smirk (1953).

The patients included several who had symptoms of heart-failure before treatment, and usually these symptoms soon disappeared. It was therefore especially remarkable that during treatment 2 patients with relative heart-failure developed symptoms of absolute failure, with œdema and dyspnœa at rest. Moyer and Mills (1953) have shown that after the administration of a single dose of hexamethonium the renal excretion of water and sodium chloride decreases. The same applies to pentapyrrolidinium. I therefore tried to find out if the symptoms of heart-failure were due to this retention of salt and water.

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Investigation

5 of our hypertensives were given experimentally a diet containing about 6 g. of sodium chloride daily. They received this diet for eight days immediately before treatment, and for the first two or three weeks of treatment. During this time the daily urinary excretion of sodium, potassium, and chloride was measured. Pentapyrrolidinium bitartrate was injected hypodermically thrice daily: at 7 A.M., 2 P.M., and 9 P.M. The initial dose was usually 1·25–2·50 mg., and the dosage was increased gradually as the patients became habituated. The blood-pressure in the erect and recumbent postures was measured thrice daily: at 8.30 A.M., 12.30 P.M., and 6 P.M.

The urinary excretion of sodium chloride decreased in all the patients at the beginning of the treatment, but the degree of retention varied much from one patient to another. 1 patient developed symptoms exactly resembling those of cardiac asthma:

Case 1.—A housewife, aged 62, had had hypertension for many years. During the past year she had had increasing dyspnœa on slight exertion, such as ordinary walking. She had never had dyspnœa at rest or cardiac pain. She was often dizzy, and her memory was poor.

On examination she was somewhat overweight, with cyanosis of the lips and slight dyspnœa at rest. On auscultation of the lungs there was slight basal crepitation; respiration was vesicular. The heart was enlarged, its action was regular, and a systolic murmur was heard over the aorta. The abdomen was obese. The liver was not palpable, and there was no ascites. There was slight œdema of the ankles. Blood-pressure on admission was 270/145 mm. Hg.

Laboratory Investigations.—Hæmoglobin 93–91%, erythrocyte-sedimentation rate 20 mm. in 1st hr., blood-urea 54 mg. per 100 ml. The urine contained no blood, protein, or sugar; sp. gr. 1·007–1·018. Electrocardiography showed negative T waves in the first and second leads, and left axis-deviation. Radiography showed considerable enlargement of the heart, especially to the left. There was no pulmonary congestion.

Treatment and Progress.—During the whole of her stay in hospital the patient was given a diet containing about 6 g. of sodium chloride daily. Since, after a week in hospital, her blood-pressure was still about 225/140 mm. Hg both in the erect and the recumbent postures, hypodermic administration of pentapyrrolidinium bitartrate was instituted. The initial dose was 1·25 mg. t.i.d., increasing to 6·25 mg. t.i.d. as she developed tolerance. During the first few days, the patient felt well, and her blood-pressure was about 170/105 mm. Hg in the erect posture. However, after twelve days' treatment she began to feel tired again, and on the fourteenth day of treatment she woke in the morning with dyspnœa, which subsided spontaneously. On the fifteenth day she could not lie down, owing to pronounced dyspnœa, which was also present in the sitting posture. Moist râles were heard basally on auscultation of the lungs, and considerable œdema of the ankles had developed. Her blood-pressure was still satisfactory, about 145/100 mm. Hg; but, since her bad condition had apparently been caused by the treatment, this was discontinued. The dyspnœa became worse in the course of the day; so in the evening we started treatment with mercurial diuretics. A profuse diuresis occurred during the night, and next morning the patient felt much better; she then had only slight dyspnœa at rest. Treatment with pentapyrrolidinium was resumed, this time by mouth, and a mercurial diuretic was given once a week. During the past month the patient has felt well; her blood-pressure is about 170/105 mm. Hg in the erect posture, and 185/115 mm. Hg in the recumbent posture. Fig. 1 shows the patient's weight, Hb percentage, and urinary excretion of sodium and chloride. The figure shows that considerable hydræmia developed during treatment. The excretion of sodium chloride before and during treatment shows that the patient retained about 30 g. of

this substance. Her weight increased by 2·5 kg. and, since she received a low calorie diet at the same time, it can be taken for granted that at least 2·5 kg. of water was retained. On the other hand, the urinary excretion of potassium was only slightly influenced, except that it was somewhat decreased during the first two days' treatment.

Before treatment this patient was on the border of absolute heart-failure, but it was undoubtedly the retention of salt and water caused by pentapyrrolidinium that caused her cardiac asthma.

The 2 above-mentioned cases with similar symptoms which were responsible for this investigation into the urinary excretion of salt and water during treatment with pentapyrrolidinium were as follows :

Case 2.—A housewife, aged 61, with severe hypertension and hypertensive heart-disease. Six days after admission her blood-pressure was still about 230/140 mm. Hg ; oral treatment with pentapyrrolidinium bitartrate 20 mg. four times a day was therefore instituted. After twenty-three days' treatment she was discharged with instructions to take 80 mg. four times a day. Except for some fatigue she felt well then. Since the beginning of the treatment she had increased her weight by 6 kg. A fortnight after discharge she was readmitted owing to great fatigue, dyspnœa on exertion, and increasing abdominal circumference. Examination now showed that she had congestion of the lungs and considerable ascites ; since the start of treatment five weeks earlier her weight had increased by 11·9 kg. and her Hb had decreased from 93 to 73% (hydræmia). We continued the treatment but administered mercurial diuretics also. During this regimen the patient lost 15·4 kg. and her Hb

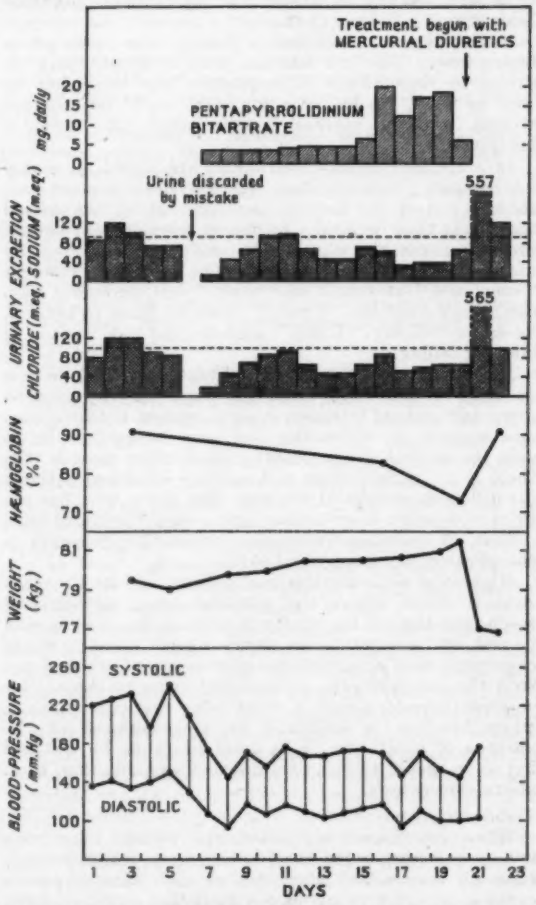

Fig. 1—Hæmoglobin, body-weight, blood-pressure, and urinary excretion of chloride and of sodium in case 1.

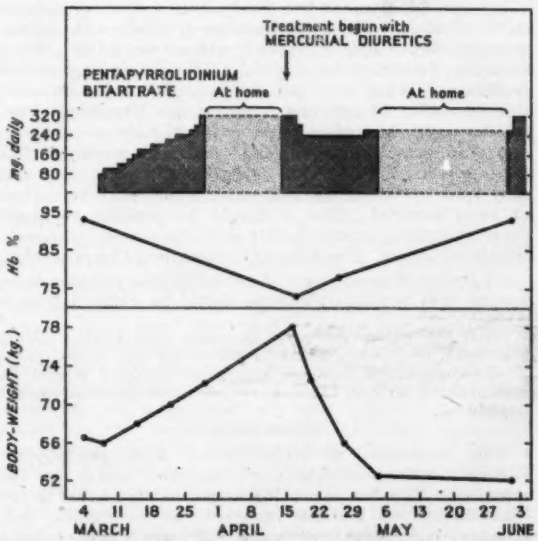

Fig. 2—Hæmoglobin and body-weight in case 2. Note hydræmia accompanying increase of weight.

increased to its previous values. Since then she has felt well during three months' continued treatment with pentapyrrolidinium combined with injections of mercurial diuretics once or twice weekly. Her blood-pressure is about 180/120 mm. Hg in the erect posture and 210/120 mm. Hg in the recumbent posture. Fig. 2 shows her weight and Hb values during treatment.

Case 3.—A hospital nurse, aged 52, with considerable hypertension and mitral stenosis. Oral treatment with pentapyrrolidinium exerted a beneficial effect on her headache and dyspnœa on exertion, but the effect on her blood-pressure was somewhat fluctuating, and several times she developed symptoms of overdosage—dizziness, and vomiting. At the same time she had slight dyspnœa at rest, tickling cough, and signs of pulmonary congestion on auscultation. These symptoms always subsided when the dose of pentapyrrolidinium was temporarily reduced.

Even though the salt and water excretion before and during treatment was not investigated in these two cases, there can hardly be any doubt that the symptoms in both cases were due to salt and water retention caused by the treatment with pentapyrrolidinium.

Discussion

During treatment of hypertension with pentapyrrolidinium some water and some salt are retained in the organism. The cause of this is not yet known. Pentapyrrolidinium may possibly influence the kidneys directly, but it is also possible that the reduction in the blood-pressure prevents an affected kidney from excreting salt and water. The latter probably plays at least some part ; for in the case of intravenous administration of veratrum preparations a pronounced antidiuretic effect is also observed (Freis et al. 1949, Meilman 1953) in spite of the fact that the reduction of blood-pressure by the veratrum preparations is chiefly of central origin, whereas that produced by the methonium preparations is due to ganglionic block.

Similar cases during hexamethonium treatment have not been reported hitherto, but Persson (1951) has observed an increase of the patient's weight in several cases during hexamethonium treatment, and I have observed the same. Owing to the rather short duration of the effect of hexamethonium, it is difficult with this form of treatment to keep the blood-pressure effectively lowered throughout the twenty-four hours, and this may be the reason why the retention of salt and water is not enough to give rise to alarming symptoms.

In our department we have seen severe symptoms in 3 of about 100 hypertensives treated with pentapyrrolidinium, and in several others we have seen a transient tendency to œdema at the beginning of the treatment. This is of no slight practical importance; this retention of salt and water is not harmless, since, as shown by the cases cited here, it may give rise to alarming symptoms. In such cases unawareness that pentapyrrolidinium causes retention of water and salt may lead to continued treatment, which may be useless or even harmful; but it should be possible to avoid these symptoms of circulatory disturbances by relatively simple measures. The following rules should be observed:

(1) During the early part of treatment every hypertensive treated with pentapyrrolidinium should be weighed twice a week.

(2) If the patient's weight increases considerably during treatment, he should be closely observed; and, if symptoms of decompensation develop, mercurial diuretics should be administered, or else the dose of pentapyrrolidinium should be reduced.

Conclusion

The treatment of hypertension with pentapyrrolidinium causes retention of salt and water in the organism. In a few cases this retention may cause latent heart-failure to become manifest, as hydræmia, pulmonary congestion, dyspnœa at rest, and œdema develop; but in the great majority of cases it produces no symptoms. My 3 patients were on the border of incompensation already before treatment; so possibly it is only in such patients that pentapyrrolidinium may produce symptoms of circulatory stress.

This condition is undoubtedly not harmless, especially if it is not recognised. The treatment can, however, be completed either by combining pentapyrrolidinium with mercurial diurectics (cases 1 and 2) or by reducing the dose of pentapyrrolidinium (case 3).

Summary

The treatment of hypertension with pentapyrrolidinium causes retention of salt and water.

In some cases this retention of salt and water may cause relative heart-failure to become absolute. This happened in 3 of about 100 hypertensives treated with pentapyrrolidinium. All 3 patients were on the border of incompensation before treatment.

Such cases can be found by frequently weighing the patient in the early stages of treatment, and this troublesome complication may be avoided by administering mercurial diuretics or by reducing the dosage of pentapyrrolidinium.

Messrs. May & Baker Ltd. supplied the pentapyrrolidinium compounds.

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"... Big buildings are not new. But in the big buildings of tradition—the churches, the castles, the city halls—it was each part that was big, and the impressiveness of the architecture depended on this. Moreover, the large elements in the design represented large spaces inside. Our new, big buildings are different. They are composed of relatively small parts multiplied almost indefinitely. And the spaces inside them are small. The repetition of more or less identical smallish units—flats or offices—is expressed externally by rows and tiers of identical windows. Not only do these threaten a new monotony, but the swollen bulk of the buildings has a destructive effect on the townscape, all the more disturbing because their purpose—housing, finance, administration—does not entitle them to dominate over their surroundings as cathedrals and courts of justice—the symbols of social organisation—can legitimately dominate over theirs."
—J. M. RICHARDS, *Listener*, Jan. 6, 1955, p. 18.

IMPOTENCE

J. F. TUTHILL
L.M.S.S.A., D.P.M.
HONORARY PHYSICIAN, LONDON AND BIRMINGHAM MARRIAGE GUIDANCE COUNCILS

SEXUAL impotence is generally regarded as a psychological disorder; but it can be satisfactorily treated by methods that are essentially physiological. To assume that it is caused by a failure in emotional relationships, and that treatment should be directed to adjusting these relationships, is, I am sure, unwise.

Classification

There are only three ways in which sexual function may fail: (1) insufficient erection (in strength, frequency, or duration); (2) premature ejaculation; and (3) absence of ejaculation.

Erectile Impotence

Causes

Many people think that there is some attraction between men and women which should arouse the men's sexual desire at appropriate times, and that there is something wrong with them, or their wives, if this desire is not kindled. But the truth is that the *primary* stimuli to erection are all through contact. Admittedly, with growth and experience, and the establishment of conditioned reflexes, erotic sensation may be aroused by a wide variety of stimuli and by fantasy. But the basic stimulus is that of touch.

Under natural conditions a young man never plans intercourse. His first contact with a woman may be casual or deliberately exploratory; but he is led on step by step, by his urge for more satisfying contact stimuli, until he reaches a point when intercourse is inevitable.

In a civilised society restrictions are placed on sexual intercourse; opportunities for physical contact are reduced; and the natural development of the sexual instinct is thus delayed. In theory development should proceed naturally when restrictions are removed by matrimony; but in fact marriage too often changes "must not" overnight to "must," and, though a man can at any stage say "I won't" without harm to himself, he can never say "I will" without the risk, sooner or later, of failing.

Nearly all the failures can be traced directly to one or other of our faulty cultural patterns. The lowest represents sexual intercourse as a contest between man and woman, in which the aim may be said to be to gain the highest score. Another elementary view is that there is a "right" type and amount of sexual activity for different periods of life and that those who deviate from it damage their health. At a higher cultural level—that of marriage manuals—intercourse becomes a complicated psychophysical skill.

Highest of all is the spiritual pattern and its Freudian shadow which ignore the physical aspect of sex and teach that the act has no significance unless it is accompanied by a spiritual or psychological union. I am concerned here only with the physiology of sex and not with the use made by, or meaning given to the act by any participants; but I must offer my opinion that, when function is inhibited by consciousness of the absence of exaltation, it is more likely to be restored by, so to speak, working from below upwards than from above downwards.

Treatment

When intercourse has failed, the patient must stop trying, and retrace the steps of courtship, which in some cases he may never have trod at all. Most impotent couples, in order to avoid a humiliating situation, very sensibly spend as little time as possible in bed together.

Often the first problem is to persuade them to spend enough time in bed together for spontaneous contact to take place. At the start a man cannot help feeling that every contact is a signal for an attempt at intercourse; and, as he does so, his attention is diverted from his sensual pleasure to its probable outcome, and the visceral reflexes are inhibited proportionately. After a time the search for pleasure becomes his objective, and he forgets that he is trying to achieve intercourse; and, so long as he is occupied in exploring, appreciating, and improving on his contact sensations, and perhaps interweaving them with erotic fantasies, he cannot be worrying about his impotence.

Such is the margin of potency in young men that many have regular intercourse for years without being aware of any sensual pleasure—the activity being kept on out of habit or a sense of obligation. But in these circumstances desire wanes early, and when they come for treatment they must still be retrained on the same lines. The essence of treatment is the simple lesson that intercourse is a sensual pleasure or nothing.

Most endocrinologists maintain that testosterone is not helpful in cases of functional impotence. On the other hand, erectile capacity is not a constant, but is reduced by stress, worry, or failure; and in such cases it is increased by giving testosterone.

Until four years ago I used methyltestosterone by mouth, with response in about half the cases; but since then I have used implantation, and in every case some improvement in erection has followed. The effect of sublingual tablets is inconstant, and, even in the patients who respond, it declines if they are taken regularly. In order to take a dose that may be effective, the man must decide some hours in advance when he will make an attempt; and planning is the main thing I try to avoid.

Morning erections can be regarded as a reliable indication of erectile capacity, being independent of the sexual situation, and in every case where these are depressed I give an implant of between 100 and 200 mg. of testosterone. I insert 25 mg. implants (2·2 mm. diameter) with a trocar and cannula beneath the skin on the outer aspect of the thigh, using 0·5–1 ml. of 'Novutox' for local anæsthesia. No stitch is required.

Several of my patients who have had injections of testosterone elsewhere have reported that there was no response from them, or that the response was too transitory to be of any use.

Special Features

Some patients have had sexual fantasies or activities which many would call perverted. Inquiry for these should be made as a routine; and, since some men will conceal such facts unless put completely at their ease, I have learnt to frame my questions in an encouraging way. The patients usually feel that their fantasy is very abnormal, and make a big effort to abandon it and approach their wives in a spirit of what they regard as "pure love." However, the fantasy may be so closely woven into their sexual reflex that they only succeed in inhibiting all sexual response.

The 48 patients in this category whom I have seen have been only masochists, mild sadists, fetishists, and transvestists; and I have told them that I think their ideas well within the normal range of variation. I have advised them to keep their fantasies and bring them in with their ordinary sex contacts; and I have made it clear that once satisfactory intercourse is established the fantasies will fall into the background. I was at first surprised and disappointed at the success of this approach; for I intended only to give them first-aid relief in a desperate situation and then settle down to learn something of their individual psychopathology. But I am now satisfied that such first-aid is all they need.

It must be difficult for a man, however good his personality, to integrate a trait that is taboo in his section of society. I cannot hold that because the effort to do so has caused a transitory loss of potency, he therefore has neurosis. Any quality that lies at an extreme of the range of variations may cause its possessor certain difficulties, and the treatment of these patients consists essentially in widening their concept of the normal range of human qualities.

Premature Ejaculation

Cause

This condition typically occurs in young well-sexed men at the start of their marriage; but occasionally it is the chief complaint of a man whose erections are failing, and in these cases the treatment is that of erectile failure. The usual story is that, as a boy, the patient had a strong urge to masturbation. (The actual stated frequency is not significant, because one cannot estimate the degree of restraint that he has exercised. This restraint, which psychiatrists call "guilt," is usually based on, by current standards, perfectly reasonable moral scruples, or on considerations of health or athletic prowess.) There was probably an ardent courtship, with involuntary ejaculations even on clothed contacts; and, if there were attempts at intercourse before marriage, they ended in a premature ejaculation, which raised some degree of reasonable apprehension in the man's mind for the prospect on his wedding night.

Difficulty in penetrating or in fitting a sheath may be an unexpected cause of premature ejaculation; but the truth is that most men ejaculate very quickly when they first make a satisfactory penetration. It is their reaction to this experience which determines whether or not they are to become premature ejaculators.

The fortunate ones are those who find pleasure in the experience, brief though it is: they are eager to repeat intercourse, which they do until ejaculation is sufficiently delayed for their full satisfaction. Since in the normal young man the capacity for erection always outlasts that for ejaculation, this cannot fail to happen. Experience stabilises the reflex, and, though ejaculation will always occur more quickly after a period of abstinence, this does not constitute prematurity. To those who ask "how long should it last?" the answer is "as long as you want it to."

The unfortunates are those who are abashed and lose their erection, or decide that it is wiser to postpone a second attempt until the next day, when inevitably the same thing happens. So they delay again, hoping that the trouble will settle down, or that in time they will discover a successful method of restraint.

If one of these men consults his doctor he will probably escape with a dose of phenobarbitone too small to impair his potency and an assurance that the trouble will improve in time. His lot is easier than that of the man who reads marriage manuals and still further distorts the natural pattern of his intercourse by attempting techniques of restraint. Both are infinitely better off than the man who sees a psychiatrist and learns that his incompetence is the symptom of some hidden defect in his emotional life.

Some of these men have such robust sex drives and such sturdy constitutions psychologically that their sex life persists for many years. They derive little pleasure from it, but they carry on to please their wives or out of a sense of self-respect, accepting their disability philosophically. More usually though, the intervals between attempts at intercourse gradually lengthen and erections fail early, as is only to be expected of any activity which does not receive its physiological reward.

These patients often complain that they are too tired for intercourse or feel exhausted after it. The fact that normal men do not make these complaints has led some people to suppose that the tiredness is "psychological." It is, on the contrary, quite natural; because such a

patient, to have intercourse, must make a great effort of restraint during the act, and find courage to face the disappointment and often his wife's exasperated tears when it is over.

Treatment

Treatment seems too grand a word for telling a man to abandon all restraint and have more frequent intercourse, but that is all that is required. Of 60 uncomplicated cases under 40 years of age, 51 reported that they were making satisfactory progress after a single visit and needed no further help, 5 were seen twice, and 4 between three and six times before the same result was achieved. Difficulty in getting sufficient erection sometimes arises in older men and in long-established cases and this must be dealt with on the lines already described.

Some men cling to the popular idea fostered by marriage manuals that a man can, or should, control the moment of his ejaculation. This error must be responsible for a vast amount of suboptimal sexual function; for, while there are excellent reasons for planned control of sexual opportunities both restrictive and expansive according to circumstances, nothing is ever gained by detracting from the spontaneity of the sexual act itself. There is in fact no way of delaying an orgasm during intercourse; and, if the claims of those who say they can do so are examined, it will be found either that they cease all movements or so much restrain them, that in effect they stop intercourse, or else that they are living so well up to their sexual capacity that they cannot ejaculate unless they make a special effort to do so. The ideal of a simultaneous orgasm in the man and woman is usually achieved when the man himself needs the additional stimulus of the woman's orgasm to bring on his own.

Not uncommonly a man reports after a few weeks that he himself is all right but that his wife is still without an orgasm. Seeing that many women take several months to reach orgasm, even when married to a competent male, it is only to be expected that one who has been deconditioned by a husband with premature ejaculation should take much longer. I always make this clear to couples and advise the husband to ignore his wife's reaction; for a woman's orgasm is like a man's erection—an involuntary reflex—and the more she strives the less likely is she to achieve it. Above all, a husband should never ask. If he is in doubt, the answer is "No," and asking only adds to the wife's difficulty by making it appear that their intercourse has been a failure. Any woman's capacity for orgasm on one particular occasion is unpredictable. Woman's orgasm depends more on the natural, unrestrained rhythm of intercourse than on the number of minutes penetration can be sustained without ejaculation. For a man to attempt restraint is equivalent to trying to drive his car at full speed with the brakes on. Men, like motor-cars, do not last long under such treatment.

Patients' replies to follow-up letters show that the result is usually a gradual improvement, and the lack of a clearly defined end-point may explain the failure of such a high proportion to report their progress. The improvement, however, influences their whole relationship, and at least in their opinion, it has been related to the advice they were given rather than any "psychological" influences. Thus a man who had been married two years said six months after his only visit: "It's made my married life; it's like getting married again, we don't get on each other's nerves and we're more contented"; and another: "the treatment prescribed has been doing me a lot of good and I think I need not have another appointment." As only half an hour is allowed for the initial consultation, it would hardly be possible to exert much psychological effect.

Absence of Ejaculation

Any man may on occasion fail to ejaculate because too short a period has elapsed since he last did so, or because he is not getting enough stimulation from the form of activity in which he is engaged. But a small proportion of men (about 3% in this series) have never ejaculated during masturbation or intercourse, though they have experienced nocturnal emissions.

If it were practicable to standardise conditions and measure the average time taken for ejaculation by a group of men, and plot it against the numbers of men in each time-period, the result would no doubt be a Gaussian curve resembling the curves obtained when the distribution of any other variable natural quality, such as height or intelligence, is similarly recorded. The quality being measured in this case would be the natural excitability of the spinal-cord reflex arc concerned.

Cause

The most important factor in lowering the excitability of this reflex is age. Kinsey's observation that frequency of orgasm declines before full maturity is reached suggests that reduced excitability rather than any decline of potency is the cause. It is probably significant that the average age at which the first attempt at intercourse took place was 32 years for this group as against 26 years in the other cases.

All except 1 was physically and psychologically normal; they had good employment records and had made good adjustments in their marriages despite their handicap. The exception differed only in being a very shy masochistic fetishist who had married at 43. He complained originally of erectile impotence but was fully coöperative in treatment and became potent only to find ejaculation was still beyond his reach.

Treatment

One's scope for increasing excitation is limited; but advice on technique, including the employment of fantasies, and the application of a vasodilator, such as 'Trafuril,' to the penis may help. Of the various pharmacological remedies, I have found a proprietary tablet containing amphetamine sulphate, strychnine, arsenic, and yohimbine the most helpful in bringing a man near to orgasm, though never to success. Octyl nitrite was ineffectual. Testosterone revives erections, and increases sexual excitability generally and the volume of semen, but I have seen no direct success from its use.

2 of the successful cases are reported below (cases 7 and 8); the 3rd only needed advice on technique; a 4th man is worth mentioning because he had already been successful by the time of his appointment.

In terms of improved technique there was no explanation. He was 31 at the time of his marriage and first intercourse, and for the first four months he succeeded in excluding the masochistic fantasies on which his sex life had formerly rested. This left him with sufficient erection for penetration but checked ejaculation. However, after making his appointment the fantasies broke through and he immediately ejaculated. A feeling of disquiet at their persistence was the reason for his visit.

Results of Treatment

The following figures, based on a postal inquiry at various intervals after treatment, give a general idea of the series, and the results, on which this paper is based:

Disability	Did not reply or not treated	Failed	Satisfied with improvement	Total
Insufficient erection ..	97	18	130	245
Premature ejaculation ..	96	2	107	205
Absence of ejaculation ..	—	6	6	12
				462

Illustrative Cases

Case 1.—A clergyman, aged 32, had been married nine years. As an undergraduate he took his work very seriously, worried about philosophical problems, became depressed, and attempted suicide. While still at the university he met his wife, and passionate desires developed, so they thought it right to get married; but, being unable to support children, they decided that their contacts should stop short of intercourse. This was not attempted until about eighteen months after marriage, when he had difficulty in penetrating, ejaculated prematurely and failed. He was advised to have psychological treatment, but this had no effect on his sexual capacity.

This man's history included a depressive episode and several major inconsistencies. But his personality commanded respect, and it was a far less serious matter to ask him to make some temporary concessions toward sensual indulgence than to probe his psyche, if one had the presumption to do so; or to question the guilts and anxieties which must anyhow afflict a young man of his temperament. Fortunately, his wife was one who could manage the paradoxical situation of stimulating his desire without appearing to ask anything for herself. He was given the usual advice and an implant of 100 mg. testosterone, and two months later was successful after six visits. He wrote eighteen months later to say that they had a baby and everything was satisfactory.

Case 2.—This man, aged 28, had been married two years. He had completed a pilot's training, but the war ended before he had flown many hours. On demobilisation he went on the stage and worked hard in repertory companies; but, seeing no future for himself, had found an opening in business, and was due to start in a month. He had a lively, responsive personality and was active and intelligent. He had no guilt about masturbation, but on the half-dozen occasions he had had intercourse before marriage (not with his wife), he had not felt at ease, and, though he never failed, he had not derived much pleasure. His wife had started menstruating on their wedding day, and the strong erections with which he had started began to fail before he could begin intercourse. He still had erections on waking and on contact with his wife, but they failed every time before penetration. His intelligence and his temporary unemployment (without financial stress) made him an ideal patient. If the method was right he must succeed. He was therefore told that if he did not write in ten days he would be sent a second appointment to come with his wife. As no letter came, the appointment was sent at the last minute. Fortunately the residual disability was only letter-writing. He wired immediately: "Interview unnecessary, machine functioning, delighted and grateful, writing."

Case 3.—A bank official, aged 38, had been married two years and had a son a year old. As a boy he had masturbated up to three times a week, and later he had had involuntary ejaculations on contact. When he had intercourse it never lasted more than three or four thrusts. Intercourse had never occurred more than once a night since his marriage, and he felt so ashamed that for some time it had sunk to once a month. He wrote three weeks after his visit "following your advice, and my wife's visit to Dr. L. (to whom I had referred her for contraceptive advice) there has been a marked improvement in our sexual relationship. We found the cap a great benefit, but no doubt the main advantage was a more optimistic outlook on the question."

I record this case in fairness to any critic who maintains that my treatment is really psychological. It is inevitable that patients should experience feelings of optimism and confidence once they can see clearly a way out of their grievous difficulty. But, as the bottle of medicine witnesses, their evidence is not reliable.

Case 4.—A 15-stone docker (aged 28) of enormous strength had been three years married and had a daughter of 18 months. He was a typical mesomorph with an amicable disposition and unquestioning self-confidence. He had never consulted a doctor nor would he have done now if his young wife had not been referred to a gynæcological department, where her lack of sexual satisfaction was discovered. He himself did not think his sexual history was a proper subject for inquiry, but it appeared that puberty was early and that street-corner intercourse started at 15. He regretted that his wife had no enthusiasm for intercourse but did not suspect that there was anything wrong with him. "Were you too quick?" "Dunno." "How many thrusts?" "About three or four." He came back in four weeks. At first he had had intercourse as many as four times in succession; it lasted ten minutes and his wife had had several orgasms. Though inarticulate, he was very grateful.

Case 5.—A wood machinist, aged 23, had been married for eighteen months. His case is included because it illustrates the universal neglect of proper inquiry into sexual function and the way in which failures from other branches of medicine are accepted for treatment by psychiatrists.

His trouble was pruritus ani, which started a few weeks before his marriage. Despite thorough dermatological treatment it persisted, and he was accepted by a psychiatrist and passed to me for treatment. The psychiatric notes gave no indication of the probable trouble but said that he was "emotionally unstable and rather tense." Sexual function was noted as being "normal," though the patient said that he had mentioned that he always reached orgasm before his wife and had been advised to restrain himself.

The sex history was typical. Puberty early; a strong urge to masturbation, sometimes gratified twice daily despite guilt. He had been physically interested in women since he was nineteen, and was liable to involuntary ejaculation on clothed contact. He had married after demobilisation and had had intercourse three times a week since. He felt this was the most that he could safely indulge in, yet despite the maximum restraint he rarely reached a dozen thrusts before ejaculating.

He accepted my usual advice and three weeks later reported that he had had intercourse almost every night and that it now lasted "the full time." The irritation was very much less. By the end of six weeks he had settled down to five nights a week, the itch had disappeared, and only faint traces remained in the skin. He and his wife felt fully satisfied.

Case 6.—This was a successful professional man of 35; he had married at 30 and had a son 2 years old. He was very hard-working, sensitive, and most considerate of his wife.

Puberty was at 13, and soon afterwards his father told him "all about things and said it was a bad thing." He never masturbated. He first had intercourse at 21. He was always quick the first time, but usually had two or three ejaculations at a time and both partners were satisfied until his wife became pregnant. Intercourse ceased early in pregnancy owing to threat of miscarriage, and when it was resumed four months after the birth of the baby, he was very quick. His wife then had little desire and was upset by his premature attempts. Twice when they were first married her cervical cap had been extracted with difficulty by a doctor, so they would not use it. He found sheaths troublesome. He developed a gastric ulcer and was in bed for six weeks, and his wife had been "under the doctor" ever since her confinement.

He came again six weeks after his first visit, but was no better. The contraceptive trouble had been settled, but his wife had no enthusiasm and he felt that her health forbade repeated intercourse, while her lack of welcome damped his ardour.

This common vicious circle, infrequent intercourse—premature ejaculation—lack of satisfaction—diminution of desire—infrequent intercourse, can be quite troublesome to break; but eight months later he replied to a follow-up letter: "The relationship between my wife and I has improved immensely."

Case 7.—An accountant aged 28 had been married three years. Puberty was at 12, and he had had regular physical contacts with good erections and enjoyable sensations since adolescence. He had regular intercourse for the first two years of his marriage, but he never ejaculated except during sleep. He had several months' psychological treatment without avail and was given a hopeless prognosis by a recognised authority. His wife badly wanted a child and gave full range to her disappointment in tears, tantrums, and reproaches. When he was first seen his erections were poor and infrequent and intercourse rarely occurred. An implant of 150 mg. quickly restored his erections and gained a spell of coöperation from his wife, but despite every effort the orgasm always eluded him. He noticed, however, that nocturnal emissions often

followed attempts; so he was given a Malleson artificial-insemination syringe and advised the days on which conception was most probable. Sexual activity was kept going for six months in the hopes of achieving a pregnancy in this way with little expectation of any other result.

Then, one evening whilst watching television (he said bored not stimulated by it) he had the desire for intercourse and it took place in the sitting-room. (I think this is significant as illustrating the importance of spontaneity to both partners.) His wife was more than usually responsive, their movements rapid and synchronous, and he ejaculated. He has continued to do so ever since and his wife is now pregnant and contented.

Case 8.—A Civil Servant, aged 28, had only been married five weeks. He had a generalised ichthyosis and had suffered from a prolapsed disc. Since the age of 16 he had had physical contacts with erections but had never attempted intercourse before marriage or had any ejaculation except in sleep. His main complaint was absence of ejaculation; but he had a lot to say about his lack of agreeable sensations.

Never having succeeded with one of these cases at that time, I did not welcome him and can only remember that I chided him for his superficial approach. Not until I was going through the records seven months later did I notice that he had cancelled his second appointment ten days after his visit, with a letter to the clinic thanking me for "sympathetic and helpful counsel." Thereupon I wrote asking what advice I had given him and in what way it had been helpful, to which he replied:

"I have indeed overcome my little trouble thanks to your help.... You may remember that I had no difficulty in achieving erection, but I came to you with the question 'What is the point? I thought I was supposed to enjoy it.' On your advice I forget about enjoyment and set out merely to find what pleased my wife. This resulted in my performing the normal movements of intercourse without taking any interest in it at all, but I found that she responded at once. It all ended in an ejaculation which seemed to last only a second or two and although enjoyable didn't seem to me to justify the effort. However, there was a starting-point and using my wife's reactions as a guide to speed I performed this artificial process fairly regularly. It was a case of pleasure by proxy because my main enjoyment came from a sense of power as I found myself able to give pleasure.

"As you said I would, I have gradually acquired a taste for this business and now I enjoy it from beginning to end."

Case 9.—Sexual fantasies based on immature girls had worried a solicitor aged 32 since adolescence. He had never indulged in any contact or, even in imagination, wanted intercourse. He married at 28 without any previous sexual experience, but intercourse was precarious from the start and he tried to halt its decline by getting his wife to substantiate his fantasies in speech and dress. This was not successful; he became completely impotent and failed in two jobs. His wife had just left him and started proceedings for mental cruelty.

He was told that his fantasies were probably shared by a fair number of pubertal boys and later abandoned as opportunities for contact with older girls came along. It was his misfortune that a shy, sensitive nature and careful upbringing had denied him these opportunities. His mistake was trying to exclude the fantasies and then later to enact them. He should have taken them to bed with him and in time they would have receded.

Notwithstanding that he saw his wife the next day and allowed her to get the gist of my advice from him (receiving in exchange some blistering comments on my depravity), she returned home. Intercourse restarted and they both experienced greater satisfaction than ever before. He said that apart from the recovery of his potency he felt a completely new man so great was the load now off his mind.

Was he right? Or is he still a psychological mess whom I should have left impotent so that I could have pulled his psyche to bits and rebuilt it?

Conclusion

There seem to be only two possible primary causes for sexual impotence. The first and generally accepted view is that it is psychological, the result of faulty personal relationships, and that therefore the first object of treatment must be to unravel and readjust these. The alternative view which I have tried to put forward is that the primary cause is a faulty development of the sexual reflexes, due fundamentally to the restraints of society. Naturally these restraints react on the more sensitive men, and inevitably, once impotence is established, secondary stresses arise between husband and wife. These stresses may take up so much of the picture that they appear to be the primary cause, and it may sometimes be that the resolution of these stresses allows the natural force of recovery to succeed.

I suggest that psychological investigation is never indicated until one is satisfied that physiological requirements are fulfilled. It has been my experience that once this is done nothing more is needed.

It would be wrong for anybody to conclude that just because social restraints sometimes cause impotence in susceptible men these restraints should be relaxed. For one thing there is no way of knowing whether or not impotence is a serious problem in the population at large, and for another there is still much to be learnt about the effect on society in general of such restraints. Better sex education within the existing limits would probably have prevented all the cases I have seen, but it would have to be on different lines from that of any of the existing marriage manuals.

The writings of Gesell, Sheldon, and Kinsey provided the background for this work. But for the force that kept me swimming against the tide for five years without advancing, I am indebted to the rigorous training, in making and relying on my own observations, which I received fifteen years ago at Charing Cross Hospital from a neurologist to whom I remain very grateful.

TORSION OF A FALLOPIAN TUBE

T. M. ABBAS
M.D. Edin., F.R.C.S.E., M.R.C.O.G.
LECTURER IN OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF SHEFFIELD

TORSION of a fallopian tube is rare and is seldom, if ever, diagnosed preoperatively, because it produces no pathognomonic symptoms or signs. This is especially true when the tube is known to have been healthy, as in the case reported here.

The first case was published by Bland-Sutton (1890). Régad (1933), reviewing 201 cases of torsion, found that in 24% the tube had previously been apparently healthy; in 18% it was a hydrosalpinx; in 14% it was part of a hernia; in 13·5% there was infection, tumour, or ectopic pregnancy; and in 12% there was an intra-uterine pregnancy.

Torsion during pregnancy was fully reviewed by Savage (1936), who gathered 13 previously published cases and added 1 of his own; and Caldwell (1949) and Kushner and Rosenbaum (1952) have since reported similar cases. Michaelson (1948) described a case of torsion of a previously healthy tube in a non-pregnant woman.

Reviewing the ætiology and mechanism of tubal torsion, Blum and Sayre (1937) discussed many theories and examined the influence of anatomical malformations, peristalsis of uterus and tubes, venous engorgement, and sudden body movements in initiating torsion in the presence of disease.

The predominating clinical feature is sudden severe pain in an iliac fossa, associated with localised guarding and tenderness and usually nausea and vomiting. The temperature is usually normal. Tachycardia is often present. Uterine bleeding, which follows the onset of pain, is presumably due to pelvic congestion. This may be compared with the absence of bleeding shortly after torsion of the pedicle of an ovarian cyst. Symptoms referable to the urinary tract (McKerrow 1934) or to the alimentary tract have been observed. The severity of the symptoms depends on the degree of torsion, the amount of interference to the blood-supply, the extent of gangrene (Anderson 1945), involvement, if any, of the ovary, and the extent of venous thrombosis.

The similarity of the symptoms to those of tubal pregnancy, a small twisted ovarian cyst, salpingitis,

appendicitis, mesenteric lymphadenitis, and strangulated hernia make accurate preoperative diagnosis difficult. All 13 cases collected by Savage (1936) and his own case were misdiagnosed. A helpful diagnostic feature is the presence of intraperitoneal serosanguineous fluid comparable with that found in early cases of ectopic gestation; it can be found by aspiration of the pouch of Douglas.

Case-report

A married woman aged 32, who had borne one child, was first seen and admitted to the Jessop Hospital for Women, Sheffield, on June 8, 1954, with the history that on June 6 she had a sudden attack of colicky intermittent pain in the left iliac fossa and radiating to her back and down the lateral aspect of her left thigh. She felt nauseated and vomited twice. The pain was followed shortly afterwards by vaginal bleeding, but the loss did not cause any worry because this was about the time of her expected menstrual period. She stated that menstruation had always been regular, 5/28, and that the last monthly period, which had been quite normal, was on May 11—28 days before admission.

On examination she was pale, with pulse-rate 100, normal temperature, and blood-pressure 120/75 mm. Hg. Her abdomen was slightly distended, rigid, and tender in the left lower quadrant; there was no evidence of shifting dullness. Examination per vaginam showed a normal anteverted mobile uterus and normal right tube and ovary. There was, however, much tenderness on movement of the cervix, and a tense, tender, mobile swelling as big as a plum was palpable to the left of the uterus. Either ectopic gestation or a twisted ovarian cyst was provisionally diagnosed, though the signs and symptoms were not altogether typical of either condition. Torsion of the tube was not considered.

Operation.—Under general anæsthesia the above-mentioned findings per vaginam were confirmed, and on aspiration of the pouch of Douglas some faintly bloodstained serous fluid with crenated red cells was obtained. At laparotomy the peritoneal cavity contained about 8–10 oz. of fluid similar to that removed by aspiration. The uterus and right adnexa appeared normal (the right ovary contained a recent corpus luteum). The left fallopian tube, however, had undergone a clockwise twist of 540° and was distended with blood. The left ovary appeared healthy apart from some exudate on its surface. The left tube was removed.

Postoperatively recovery was uneventful and the patient was discharged on June 22. Seen on July 20 she was in good health and said she had menstruated normally on July 14.

Pathology.—The specimen removed at operation was a fallopian tube whose proximal part appeared normal and distal part dilated to 1 inch in diameter. The fimbriated end was obliterated by partially organised clot. Section of the dilated part revealed blood-clot in the lumen and hæmorrhage in the wall. Histologically, apart from the extravasated blood and partial tissue necrosis, there was no evidence of pregnancy, nor were any chorionic villi seen in the clot. The condition was that of hæmatosalpinx due to torsion in an apparently healthy fallopian tube.

Discussion

This case is a typical example of hæmatosalpinx due to torsion of a healthy fallopian tube. The chief points of interest are as follows:

(1) The cause of torsion, as in most of these cases, is unknown, but pelvic congestion brought about by the approach of a menstrual period may have been a factor.

(2) The original diagnosis was erroneous.

(3) Uterine bleeding following on the torsion was probably due to secondary vascular engorgement, a common finding in these gynæcological complications.

(4) Although aspiration of the pouch of Douglas did not establish the diagnosis it was of real assistance in the decision for laparotomy.

(5) Conservation of the ovary on the affected side was possible even though the tube had undergone a twist of 540°.

Summary

A case is reported in which torsion occurred in a previously healthy fallopian tube.

In many cases the cause of the torsion is unknown but pelvic disease appears to predispose to this accident.

Torsion of a fallopian tube can seldom, if ever, be diagnosed before operation, but symptoms and signs similar to those of torsion of a small ovarian cyst with the addition of immediate uterine bleeding should bring the possibility to mind.

Aspiration of the pouch of Douglas should produce evidence similar to that found in early ectopic pregnancy.

The decision regarding whether the ovary can be conserved or not must necessarily be made at laparotomy.

I should like to thank Prof. C. S. Russell for his permission to publish this case and for his helpful criticism and advice.

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TORSION OF THE TESTICLE

BETTY M. L. UNDERHILL
M.A., B.Sc. Oxfd, M.B. Lond., F.R.C.S.
REGISTRAR, CHASE FARM HOSPITAL, ENFIELD, MIDDLESEX

THE clinical picture of torsion of the testicle is characteristic, and descriptions of it vary very little. Aird's (1949) account is representative: "There is sudden pain, nausea, vomiting, swelling of the testis and usually an effusion in the tunica vaginalis." The agonising pain particularly impressed Lambert and Smith (1938) when they surveyed cases in boys at Rugby School; and Walton (1952) states that pain, redness, swelling, and œdema are always present in such cases.

The following case is of interest because it showed not one of these features.

Case-report

A man, aged 23, was admitted to Chase Farm Hospital on Aug. 31, 1954, with six days' history of a slightly tender swelling in the right inguino-scrotal region. He had had a little pain, scarcely more than discomfort, in the swelling and in the lower abdomen, but it had not been severe enough to keep him away from work. He had not had nausea or vomiting, and his bowels had been open regularly. The day before admission he had experienced some discomfort on walking and consulted his doctor, who diagnosed an inguinal hernia in danger of strangulation and sent him to hospital. The symptoms had abated in the twelve hours since he had seen his doctor. There had been no inguinal swelling, and the testes had both been in the scrotum before the onset of this episode. He had neither strained himself nor injured his scrotum.

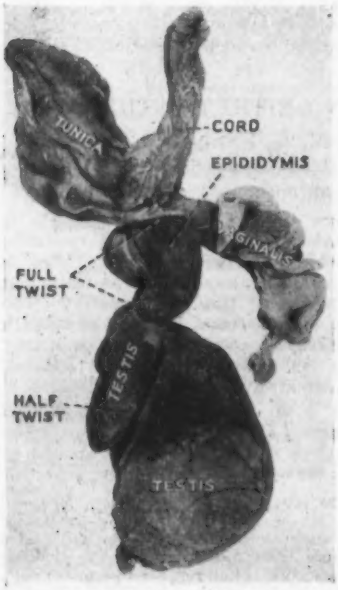
Examination.—He was thin and pale, a poor witness, and of low intelligence. He was quite comfortable, with a clean moist tongue and a temperature of 97·8°F and pulse-rate 88. On the right side there was a tense and slightly tender mass, measuring about 3 inches by 2 inches, in the inguino-scrotal region. The overlying skin was normal in colour and temperature. The mass did not allow transillumination, and there was no impulse on coughing. The testicle could not be felt separately from the swelling, and the scrotum hung considerably lower on the right than the left. Sensation in the left testicle was normal. There was no abdominal tenderness or swelling, and rectal examination revealed only soft fæces. Normal bowel sounds were present. An obstructed inguinal hernia was diagnosed. The possibility of testicular torsion occurred to the admitting officer, who rejected the diagnosis because he had had the condition and he most feelingly contrasted his own agonising sensations with the complete comfort of the patient before him.

Operation.—About six hours after admission local anæsthesia was induced with ½% lignocaine, and a right oblique inguinal incision was made. The inguinal canal contained only a slightly œdematous cord, and the swelling consisted of a purple testicle and epididymis in the tunica vaginalis. The mass was delivered out of the scrotum, and the tunica was opened. A few ml. of fluid escaped. The body of the testicle was twisted on itself through a half-turn. There were further complete twists between testicle and epididymis and at the proximal pole of the epididymis. The whole testicle and epididymis were gangrenous. Orchidectomy was performed, and the incision was closed. A small drain was left in the scrotum and removed after forty-eight hours.

Postoperatively progress was uncomplicated, and the patient was discharged on the eighth day with his wound completely healed. The Wassermann reaction was negative.

Comments

It is not uncommon for a maldescended testicle which has undergone torsion to be diagnosed as a strangulated inguinal hernia, but this testis, according to the patient was fully descended. Epididymo-orchitis is the more common misdiagnosis of the lesion when the testis is normally placed; but this patient had little swelling, no redness, no pyrexia, and only slight tenderness.



Operation specimen. The parts were identified histologically. (Two-thirds of actual size.)

Hamilton Bailey (1936) says that torsion cannot take place in a normal testis. Complete and high investment of the testis and epididymis by the tunica vaginalis enables the testicle to rotate freely within its enclosing sac. Such a high investment was present and can be seen in the accompanying figure, but it is difficult to understand how this could have influenced the twist in the body of the testis and that between the testis and the epididymis.

It has been said that a scrotal abnormality is likely to be bilateral, and after torsion has taken place on one side it is wise to fix the contralateral testicle. Ewert and Hoffman (1944), however, found that bilateral torsion had taken place in only 26 of the 489 published cases they were able to collect. It therefore seems justifiable to keep this patient under observation and to operate only if symptoms arise. It is essential that he should report to his doctor and be sent to hospital immediately if any scrotal discomfort or swelling develops.

Thanks are due to Mr. Max Pemberton, under whom the patient was admitted, for permission to publish.

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TORSION OF THE OMENTUM

NORMAN C. COOPER, M.R.C.S.

SURGEON TO WESTON-SUPER-MARE GENERAL HOSPITAL, SOMERSET

CASES of omental torsion are rare enough, but the following 4 came under my care in the short time of eight weeks, and all of them were associated with œdema of the peritoneum and abdominal muscles, which complication I cannot find reported anywhere.

Case-reports

Case 1.—A man, aged 31, was admitted on March 12, 1954, with twenty-four hours' history of pain in the right iliac fossa, unaccompanied by nausea and vomiting, and twelve hours' history of diarrhœa.

On examination his pulse-rate was 68, respirations 20, and temperature 98°F. His tongue was clean, and there was no fœtor oris. His abdomen was soft and moved on respiration, and bowel sounds were heard. His right iliac fossa was tender, resisted pressure, and showed rebound tenderness. Rectal examination was negative.

Operation.—The abdomen was opened through a McBurney's incision, and the oblique muscles were found to be œdematous and the peritoneum thickened. When the peritoneum was incised, bloodstained fluid welled up. The appendix was normal, but the greater omentum was swollen, red, and thickened down the lower three-quarters of its right border, which had rotated clockwise, but the number of turns could not be assessed. No cause for the rotation was found. The affected portion of omentum was resected and the abdomen closed. The patient's postoperative recovery was uneventful.

Case 2.—An obese retired sea-captain, aged 73, was admitted on March 15 to Burnham-on-Sea Hospital with forty-eight hours' history of lower abdominal pain. He had vomited once, and the pain was greatest in the right iliac fossa and over the right external abdominal ring.

On examination his pulse-rate was 80, respirations 20, and temperature 98°F. His tongue was clean, and there was no fœtor oris. His abdomen moved normally, but he was exquisitely tender at the outer border of the right rectus abdominis muscle, where an indefinite mobile mass could be felt.

Operation.—A right paramedian incision was made through an œdematous abdominal wall. When the peritoneum was opened, a large quantity of bloodstained fluid was found, and the mass was obviously greater omentum. No other abnormality was found in the abdomen, and there were no adhesions of the greater omentum either to abdominal wall or contents and no herniæ. The lower border of the greater omentum was almost gangrenous and twisted clockwise three times on its long axis. The affected portion was removed by serial ligation proximally and resection. The patient's recovery was uneventful.

Case 3.—A male clerk, aged 22, was admitted on May 8 with five days' history of pain to the right of his umbilicus. This had persisted up to the time of his admission, when it had moved to his right iliac fossa and become worse. He had had nausea but no vomiting. Slight diarrhœa had been present on the third day. He had been gaining weight.

On examination his pulse-rate was 98, respirations 20, and temperature 98·6°F. His tongue was clean, and there was no fœtor oris. His abdomen moved normally on respiration, and bowel sounds were heard. The right iliac fossa was very tender and resisted palpation. Rectal examination was negative.

Operation.—Laparotomy was done through a McBurney's incision, and the oblique muscles were found to be œdematous and the peritoneum much thickened. Bloodstained fluid was present in the abdominal cavity. The appendix was normal, but a thickening was felt higher up, which proved to be in the greater omentum, which had a thickened plum-coloured right border which had rotated clockwise. This affected portion was ligated and resected, and the abdomen closed. The patient's convalescence was uneventful.

Case 4.—A girl, aged 5½ years, was admitted on May 11 with five days' history of "stomach ache" followed by pallor. This pain became acute just before admission and was generalised over the abdomen. There was no vomiting, but nausea was present. The bowels had acted regularly, and there had been no urinary symptoms.

On examination her pulse-rate was 120, respirations 25, and temperature 100°F. There were no signs in her chest or central nervous system. Her abdomen moved normally on respiration, but there was much tenderness with guarding in the right iliac fossa. Rectal examination revealed hard fæces but no tenderness.

Operation.—My house-surgeon (Dr. M. Ree) opened the abdomen through a McBurney's incision and noticed that the peritoneum was thick and œdematous. The abdomen contained sanguineous fluid, and the greater omentum was black and thickened down its right border, which was twisted clockwise. A few rubbery glands were present, but otherwise nothing abnormal was found. The twisted omentum was resected, the appendix removed, and the abdomen closed. The patient's postoperative recovery was rapid.

Summary

4 cases of omental torsion occurred in eight weeks: 3 in men, and 1 in a girl. The youngest patient was 5½ years (I have not heard of this condition at so early an age) and the oldest 73.

3 cases were of the primary (Payr's hæmodynamic torsion) type, all affecting the right free border of the omentum. The 4th (case 2) was a lesion of the lower border of the greater omentum. In all the rotation was clockwise.

All 4 cases presented signs suggesting appendicitis, but there was no furring of the tongue or fœtor of the breath, and, except in case 4, there was neither pyrexia nor rise in pulse-rate.

One feature common to all, which I cannot find mentioned in any published report, was œdema of the abdominal muscles and peritoneum. The presence of the former tempted one to make a diagnosis before the peritoneum was opened.

In no case was an obvious cause for the torsion found.

Preliminary Communication

THE EXCRETION OF PHOSPHOETHANOLAMINE AND HYPOPHOSPHATASIA

WE have during the past year been studying some cases of infantile and adult hypophosphatasia. In addition to the changes in the bones and tissues that have been noted by others we have made an observation that has not so far been reported. As increasing attention is being paid to hypophosphatasia by physicians and pædiatricians we have decided to report our observation briefly so that others interested in this aspect of the disease may study it on their own cases.

Urine obtained from a two-month-old male child suffering from hypophosphatasia and which showed the usual "rachitic" bone changes, hypercalcæmia, and a low alkaline phosphatase in the serum, was subjected to paper partition chromatography for amino-acids. A spot corresponding to that for phosphoethanolamine was found. No corresponding spot for ethanolamine was present.

As phosphoethanolamine can act as a substrate for the enzyme phosphatase, the excretion of this substance in the urine of these patients appears to us to be of significance and to indicate one way in which their metabolism may be deranged.

Medical Research Council
Department of Experimental Medicine,
University of Cambridge

R. A. MCCANCE
M.D. Camb., F.R.S.
A. B. MORRISON
M.B. Belf., M.D. Duke

University College
Hospital Medical School

C. E. DENT
M.D. Lond.

Medical Societies

ROYAL SOCIETY OF MEDICINE

The Future of Neurology

A MEETING of the section of neurology was held on Jan. 6, with Prof. F. J. NATTRASS, the president, in the chair.

Sir FRANCIS WALSHE, F.R.S., made a plea for a more realistic approach in neurological research. The primary responsibility of neurologists, he said, was to seek the cause of illnesses and find ways of curing and preventing them: could it truthfully be claimed that present research was directed effectively to this end? Nobody disputed the value of the contributions made by the neuro-anatomists and neurophysiologists; but, despite a century of nosography and morbid anatomy, the cause of disseminated sclerosis, motor-neurone disease, and the metabolic disorders of the nervous system remained undetermined, and we were as far as ever from finding a cure for them.

The fruitful investigations of the pioneer physiologists had led later workers to assume that study of the anatomy and physiology of the nervous system would inevitably yield an answer to every ætiological and therapeutic problem. This belief persisted even today, as was shown by the eagerness with which the younger generation of neurologists had seized upon the new diagnostic electronic devices. Yet it had to be conceded that, in the last twenty years, all major advances in treatment had resulted from chemical studies—studies made, moreover, not by clinical or experimental neurologists but by workers concerned only incidentally with nervous diseases. Thus, though the symptom-complex of subacute combined degeneration of the cord was identified in 1900, not until twenty-six years later did workers—outside neurology—determine its ætiology and provide the effective remedy; and many similar instances could be cited.

"All around us in medicine," said Sir Francis, "we find physicians working in chemistry and biochemistry, or in any discipline that may be needed to elucidate the medical problems upon which they are engaged"; and it was nothing less than conservatism and lack of vision that had prevented neurologists from doing the same. To regard neuropathology as concerned solely or mainly with what could be seen in a microscope or a post-mortem room was, at this time, to take a narrow and obsolete view.

Welcoming the Medical Research Council's recent creation of scholarships to enable young clinicians to train for three years in a relevant scientific discipline, Sir Francis said that this was an example of the kind of administrative measure which neurology particularly needed. In marked contrast was the attitude of the neurology committee of the Royal College of Physicians who, when they recently defined the curriculum of the seven-year course of training for neurologists, had omitted to mention the basic sciences, and had merely expressed a hope that some time would be found in the course for pathology, psychiatry, and surgery—not forgetting research and foreign travel. This "travesty of a training," said Sir Francis, would consequently involve seven years of largely repetitive statutory clinical appointments. It was totally unsuited to the needs of the situation, and was likely to damp the spirit of any young man of original mind. Much more should be expected of neurologists than the ability to provide what had been called "consultant services."

Prof. G. PAYLING WRIGHT said that only by giving close attention to the present trend and progress of ideas could neurological research be directed into productive channels. The future of any specialty depended on the

extent to which it assimilated contemporary discoveries in the laboratory, and on its ability to induce scientists to undertake the investigations likely to prove most profitable to practical medicine. A great present need was for the re-establishment of close and productive relationships between medical men and scientists.

In the advance of medical knowledge there had been little in the way of any organised attempt to distinguish between major and minor objectives, or to estimate the adequacy of the available resources. For instance, how many investigators were engaged in unravelling the pathogenesis and chemistry of the demyelinating diseases, which all agreed were fundamental problems in neurology? The failure to assess the relative importance of the many problems which confronted us was one of the most serious deficiencies of modern medicine. As a result, the none too large resources of medical and scientific investigation were being dissipated over matters of lesser consequence.

Referring to neurophysiology, Professor Payling Wright asked whether there was justification for letting the study of the biophysics of neurones absorb so much of the resources of neurology. Attention might be paid more profitably, he believed, to the vessels of the central nervous system and to the cells of the neuroglia; and he urged that younger investigatcrs be encouraged to inquire into the obscurity that still envelops the reactions of the nervous system to drugs and allergens, as well as into the biophysics and biochemistry of its tissue fluids. Biochemistry, in particular, seemed to him the discipline most likely to infuse neurology with new and productive ideas, though the peculiar difficulties associated with the biochemistry of nervous tissues admittedly acted as a deterrent to workers in this field. However, the introduction into biochemistry of the physically recognisable isotopes had provided medicine with an exceptionally powerful technique for exploring metabolic processes As a result, investigations could now be resumed into the hitherto baffling problems of the synthesis and breakdown of brain lipids—a field that had remained almost untouched since Thudichum and his followers had been forced, through exhaustion of their technical resources, to relinquish their pioneer studies.

The future of neurology, Professor Payling Wright concluded, lay not in the isolation of problems and investigators but in the closer intellectual collaboration between those who saw and appreciated the important problems and those who could bring expert knowledge to bear on their solution.

In the discussion that followed, Dr. W. RITCHIE RUSSELL drew attention to the serious shortage of neurologists throughout the country, and particularly in London. He thought that, since the best facilities and opportunities for research were to be found in the universities rather than at Queen Square, what was needed was first to build up these university centres.

Mr. D. W. C. NORTHFIELD pointed out that under the National Health Service little or no provision had been made to enable neurologists—or, indeed, specialists in any branch of medicine—to combine routine clinical duties with research. He proposed that influence should be brought to bear upon those who arrange the National Health Service to make this financially possible.

Referring to neurosurgery as the "naughty child" of neurology, Mr. WYLIE MCKISSOCK said that the tables had lately been turned, and it was the neurosurgeons who were now "repressing" the neurologists. This policy was far from wise: for neurology to advance, it needed to go hand in hand with all its associated branches, including the basic scientific disciplines. He strongly advocated that a neurologist should always be appointed wherever a neurosurgical team was established. Dr. DENIS WILLIAMS agreed that the greatest benefits to neurology would result from workers in various relevant departments of medicine collaborating in teams; but he thought that new discoveries would have to come first from the fields of chemistry and physics before there could be much progress in neurology. He reminded the audience that three biochemists supported by the Medical Research Council were now working at Queen Square.

Summing up, Sir FRANCIS WALSHE reiterated his conviction that a fruitful future for neurology lay rather with experimental pathology than with electrophysiological studies. In the case of the latter it seemed that many studies revealed more about the properties of the apparatus used than of the functions of the nervous system.

Reviews of Books

Prefrontal Leucotomy and Related Operations

Anatomical Aspects of Success and Failure. ALFRED MEYER, M.D. Bonn, professor of neuropathology, Institute of Psychiatry, Maudsley Hospital, London; ELIZABETH BECK, research assistant, Institute of Psychiatry, Maudsley Hospital, London. Edinburgh: Oliver & Boyd for the William Ramsay Henderson Trust. 1954. Pp. 60. 10*s.* 6*d.*

BASED upon the William Ramsay Henderson lecture delivered by Professor Meyer in Edinburgh in 1953, this book surveys anatomical investigations carried out at the Maudsley Hospital on brains of leucotomised patients who survived the operation long enough for the result of the treatment to be judged. It is based on 102 cases, of which 62 were histologically fully investigated—the largest group hitherto collected. The handling of this material was masterly, the planning of the pathological procedure admirable, the investigation systematic and painstaking, and the interpretation careful. Since the patients were examined and treated in many hospitals and observed by various people using different standards, conclusions could only be drawn with caution. Still, it was possible to give some answer to one of the most controversial problems—namely, how much the clinical result was influenced by the quantity of frontal lobe isolated, and how much it depended on the locality of the operation. There was considerably more frontal-lobe interference

"in the 24 much improved or recovered cases, as compared with the unimproved group. This, of course, does not mean that the more of the frontal lobe is cut the better will be the results, but it does mean that the cut must be adequate in order to be effective. . . . While the quantitative factor thus retains its importance, a few facts have emerged which point to some regional localisation. The dorsal and, in particular, the dorsolateral sectors of white matter do not appear to be as significant for improvement as the mid-central, orbital, and cingulate sectors. On the other hand involvement of the dorsolateral and lateral white matter, and particularly cortex, appears to be one of the factors responsible for severe personality change."

In correlating anatomical and clinical data the authors come to the conclusion that cutting of the medial orbital sector of fibres gives the best results in leucotomy, but also that the quantity of fibres removed in this sector seems to be important. By studying the retrograde degeneration in cells and fibres, they clarified anatomical problems which have hitherto been controversial; for instance, they established that the magnocellular portion of the dorsomedial nucleus and the anterior nucleus of the thalamus project into the medial orbital region, and that these nuclei receive fibres from the hypothalamus. The granular prefrontal cortex sends fibres to the dorsomedial nucleus of the thalamus only, and also a small contingent to the hypothalamus and the pontine nuclei. Most of the efferent fibres originate from the agranular cortex and end in the ventrolateral nucleus of the thalamus, corpus striatum, hypothalamus, red nucleus, and pons. Fibres originating in the premotor parts of the orbital region and in premotor area 6 end in various nuclei of the hypothalamus; the ventromedial nucleus of the hypothalamus seems to be the most important end-station. Schematic drawings illustrate the cortico-

subcortical connections, and an appendix tables the entire case-material with the relevant clinical and anatomical data. The book presents well the basic anatomical facts relating to leucotomy.

World-Atlas of Epidemic Diseases

Part II, section I. Editor: Dr. ERNST RODENWALDT. Heidelberg. Sponsored by the Heidelberger Akademie der Wissenschaften. Hamburg: Falk. DM. 57.50.

THOUGH the support of the Bureau of Medicine and Surgery of the U.S. Navy has been discontinued, the second volume of this work has begun to appear under the sponsorship of the Heidelberg Academy of Sciences. The large loose-leaf format is similar to that of the first volume [1] and the present section covers eight diseases—bacterial dysentery in Africa; relapsing fever in Europe; smallpox in Europe; rabies in Central Europe; trachoma; Bornholm disease; sleeping-sickness; and Chagas' disease: there is also a population map of the U.S.A. The notes—the English version is still heavy going in places—occupy more space than the maps, but they remain no more than notes. This gives a pointer to the major conceptual defect of the work. Just as films are invaluable as aids, but only as aids, in teaching, so maps—apart from straight geographical maps—should be explanatory adjuncts and not *pièces de résistance*.

Diseases of the Skin

8th ed. OLIVER S. ORMSBY, M.D., Rush professor of dermatology emeritus, University of Illinois, and HAMILTON MONTGOMERY, M.D., M.S., professor of dermatology and syphilology, University of Minnesota. London: Henry Kimpton. 1954. Pp. 1503. £8.

A NEW edition of Ormsby and Montgomery is always an important event. For many years this book has been one of the most authoritative works on dermatology in the English language—an Osler of the dermatologists. Within it, the inquiring reader can find all the information he needs, carefully tabulated and with comprehensive references.

It is a moot point whether 1500 pages is not the limit of useful expansion; but in a work of reference such as this unwieldiness is not such a disadvantage as in a textbook. No-one in his senses would attempt to learn dermatology by reading a work of this sort from cover to cover; the dermatological art can only be acquired by selective reading in the light of clinical experience; but even the most experienced of dermatologists can advantageously refer to this book, overtly or secretly according to his nature, hoping for guidance and often finding it when confronted with a rarity or a difficult problem.

Extensive use in this edition has been made of other authoritative works on histopathology, syphilology, mycology, tropical diseases, and the like, and it also contains contributions by DeLamater, Farber, Kierland, and Lobitz. Today multiple authorship is inevitable and on the whole desirable. Dermatology is concerned with so many aspects of life—social medicine, industrial medicine, toxicology, psychiatry, bacteriology, and genetics—to mention only a few—that the days of comprehensive monographic textbooks are passing.

The contents are as up to date as they can be in any large textbook in this age of rapid progress. Amongst the recent additions are items on cat-scratch disease, incontinentia pigmenti, facial eosinophilic granuloma, and self-healing epitheliomata. Ecthyma contagiosa may be the correct name for orf as it occurs in sheep, but is it appropriate to the disease as it affects man? The section on tuberculosis contains only a short reference to the use of isoniazid in lupus vulgaris and states that it is ineffective in erythema induratum, an opinion with which many would disagree. There are many excellent clinical illustrations, both monochromatic and coloured. There are also many clear photomicrographs with descriptive matter on histopathology. This is an ideal arrangement, helping the integration of clinical and pathological thought. This volume is, in fact, two works in one, a complete guide to clinical and histopathological dermatology.

It is sad to record that Dr. Ormsby died last year while the proofs of this book were being read. This eighth edition is his monument and a worthy one.

1. *Lancet*, 1953, i, 528.

Bedwetting

PORTIA HOLMAN, M.D., M.R.C.P., D.P.M. London: Delisle. 1954. Pp. 40. 5*s*.

A SHORT, clear, practical book on bedwetting is what every family doctor needs at some stage of his career, and here it is. From a large experience of children with this symptom Dr. Holman is able to classify the types of case commonly seen, to simplify diagnosis, and to assure the doctor who takes the trouble to differentiate between the types that there is a large group of bedwetters who will respond, without consuming much of his time, to treatment which will put no undue tax on his skill.

Liver Injury

Transactions of the Twelfth Conference, September, 1953, Princeton, N.J. Editor: F. W. HOFFBAUER, M.D., associate professor of medicine, University of Minnesota Hospitals. New York: Josiah Macy, jun., Foundation. 1954. Pp. 231. $4.25.

THE future policy of the Josiah Macy, jun., Foundation is, as stated by its medical director, to restrict the conferences on any one subject to five. This volume is the twelfth and last of a series on liver injury, and a worthy companion to its predecessors. The main subject was the rôle of the liver in the metabolism of the three major foodstuffs.

Carbohydrate metabolism of the isolated perfused liver of rabbits and cats was discussed by Lundsgaard, and a discussion followed on glycogen deposition in the placenta and the increased sensitivity of pregnant women to the diabetogenic action of corticotrophin and the adrenal corticoids. In the section on fat metabolism, which dealt mainly with the rôle of co-enzyme A, Gurin presented the important results of his work on the synthesis of fatty acids from acetate by an in-vitro system of water-soluble enzymes extracted from pigeon or rat livers. In the section on protein metabolism the emphasis rested on the effect of diet upon the composition of the liver cell and on the search for a suitable standard of reference for the quantitative studies.

Prerequisites of Good Teaching

And Other Essays. Dr. ERNEST SACHS, Research Associate, Surgery and Medical History, Yale University. Hamden, Connecticut: The Shoe String Press. 1954. Pp. 118. $2.50.

IN this humane and nicely printed little book, Dr. Sachs presents some of his random thoughts as a teacher and practitioner of surgery. In particular he has some interesting things to say about the value of well-chosen questions in the instruction of students. The hazards and responsibilities of our profession—such as the need to warn the family of the seriousness of a patient's condition, or to comfort them when an operation has failed, or the need to decide what to do when a case is diagnosed too late, or whether to prolong life in a hopelessly ill patient—are considered wisely if not deeply; and the generosity and integrity of the writer light up every page.

Physiology and Biochemistry of the Skin

STEPHEN ROTHMAN, M.D., professor of dermatology, University of Chicago. Chicago: University of Chicago Press. Cambridge: University Press. 1954. Pp. 741. £7 6*s*. 6*d*.

Dr. Rothman's learned and comprehensive study of cutaneous physiology is a monumental work. As cytochemistry, tissue-culture, and the many other methods of studying the skin are likely to yield valuable results in the future, this edition will probably be the first of several.

The book begins by describing the mechanical properties of the skin and its electrical behaviour. Other sections deal with absorption, vascular reactions, sensory and secretory functions, heat regulation, the pH, the lipid film, keratinisation, collagen and connective-tissue ground substance, pigmentation, and hair growth. Obscure matters, such as peroneal alopecia, the higher iron-content of the hairs of redheads, the differing pH of the skin of man and domestic animals, and many other fascinating subjects receive due attention. Some of the photographs are excellent, particularly those of nail-fold capillaries, catheterisation of apocrine glands, cholinesterase in eccrine glands and cholinergic fibres, experi-

mental miliaria, and club-hair formation. The diagrams are all good.

The book contains something to help the inquiring mind on all dermatological problems and on the way in which Man responds to his environment. It will be perhaps of most value to the physiologist and biochemist, but every practising doctor should find much in it to stimulate him, and after reading it he may feel competent to discuss the Krebs cycle as glibly as he (or his barber) already discusses the hair cycle; while sulphydril groups and disulphide linkages will seem like ABC.

The Practice of Local Anæsthesia (4th ed. London: Sir Isaac Pitman. 1954. Pp. 275. 25*s*.).—The purpose of this book is to give a relatively concise and practical picture of local anæsthesia to surgeons, general practitioners, and anæsthetists, studying for their diploma; and since it has reached its fourth edition Mr. George Bankoff can fairly claim a good measure of success. The first part deals with general principles, while the second and largest part gives a detailed account of the techniques for producing local analgesia throughout the body. Unfortunately, though a thorough revision is mentioned in the preface, little reference is made to work later than 1940. This precludes any mention of the drug lignocaine, which for several years now has been established in the forefront of local analgesics, and it may also perhaps account for the author's outmoded view of general anæsthesia.

Synopsis of Medicine (10th ed. Bristol: John Wright & Sons. 1954. Pp. 1253. 35*s*.).—Sir Henry Tidy's masterpiece of compression continues to summarise the facts of medicine and instruct in common practices. Probably not even the greatest poets can claim to be lifted so often or so gratefully from the shelves as "Tidy," and their advice is seldom as explicit.

Biology of Anopheles gambiæ. Research in French West Africa (*World Health Organisation monograph series no. 9.* M. H. HOLSTEIN, Dr. ès Sc. Geneva: World Health Organisation. 1954. Pp. 172. 13*s*. 6*d*.).—This is an English edition of a useful monograph published two years ago in French (see *Lancet*, 1952, ii, 1065). The text is substantially the same, with the addition of one or two paragraphs relating to more recent work, and the bibliography has been extended from 388 to 410 references. The translation is accurate and clear; but the English text seems to emphasise the author's liking for technical terms.

New Inventions

VALVOTOMY KNIFE

THE search for the ideal knife for mitral valvotomy still goes on. Much time has been spent on attempts to solve this difficult problem. It has always appeared to me that something quite simple would be the answer, and I suggest that Brock's knife, in its simplicity, is the most suitable instrument.

However, as the cutting edge of this knife is always facing the atrial and appendiceal walls, there is the great danger that during its insertion and removal damage might be inflicted. Because of this danger I have developed a rotating mechanism (fig. 1) to be used in conjunction with Brock's knife. The cutting edge of the knife can be kept close against the finger during insertion (fig. 2) and rotated into the cutting position (fig. 3) when the exact portion of the valve has been palpated. The anterolateral cut is then made. When the knife has been passed through 180° (fig. 4), the posteromedial margin is cut with the same sawing action and without pronating the hand. On completion of these manœuvres the valve can be split further with the finger. The knife and finger are then withdrawn with the cutting edge against the finger. A clamp can be applied to the appendage or the purse-string sutures can be tied slowly as the finger and knife are withdrawn together.

It is a pleasure to thank Mr. J. Hartwell, who made the prototype. The instrument can be obtained from Messrs. Chas. F. Thackray, of Park Street, Leeds, 1.

M. LENTIN
Bolton, Lancs M.B. N.U.I., F.R.C.S.E.

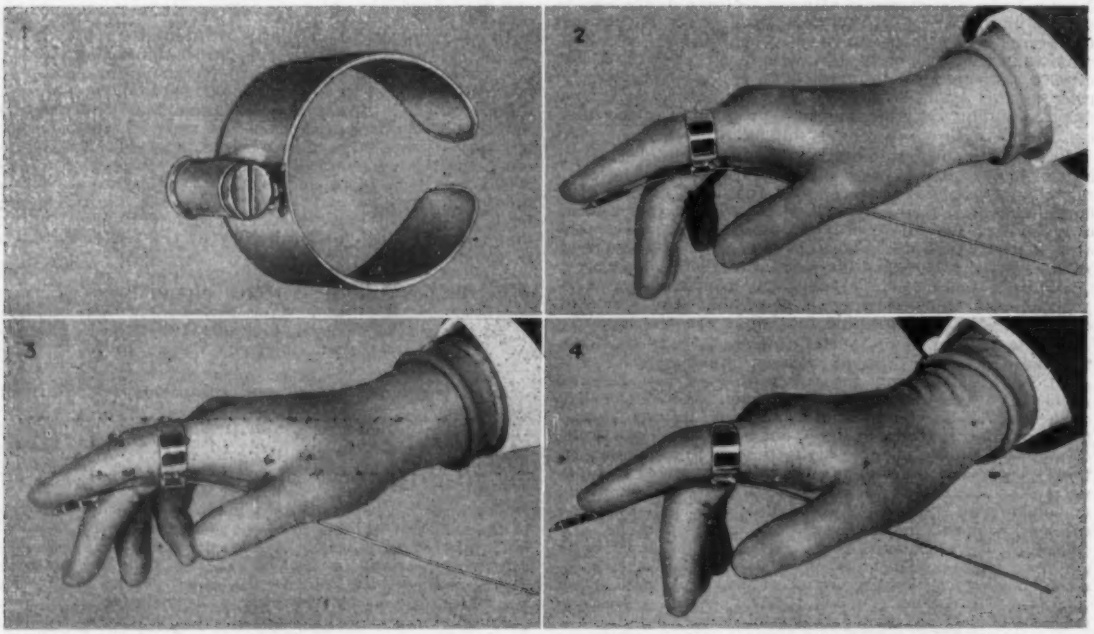


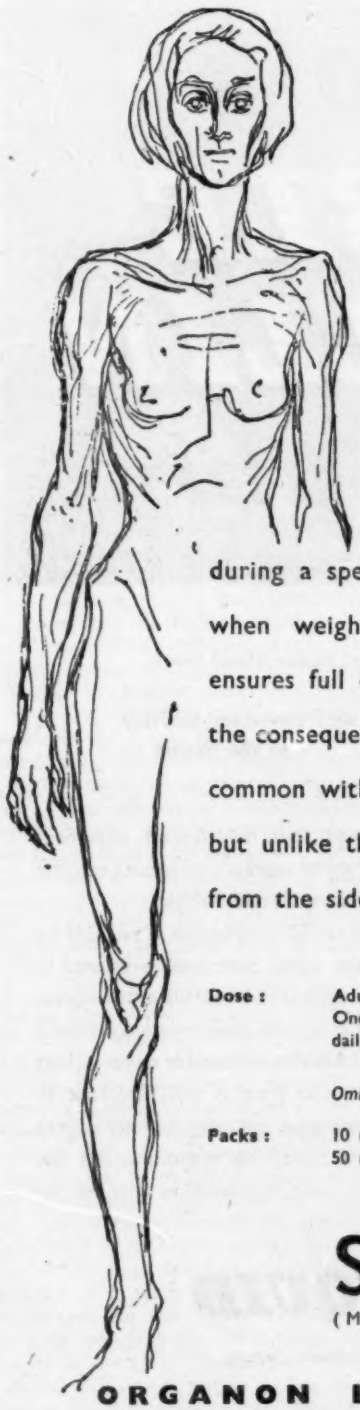
Fig. 1—Ring with rotating mechanism.

Fig. 2—Safe position (cutting edge towards index finger) for entering and leaving atrium.

Fig. 3—Cutting position for dividing lateral commissure.

Fig. 4—Cutting position for dividing medial commissure.

Note that in actual use a second glove is worn with its index finger cut away at the level of the terminal interphalangeal joint. The valvotome handle is marked on one side to indicate the position of the cutting edge.



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THE LANCET
LONDON: SATURDAY, JAN. 15, 1955

Mental Health and Public Health

THERE was a time, not so long ago, when mental health could be discussed only in terms of woolly benevolence. A fine thing we all agreed; but how exactly did one come by it? It would be nonsense to pretend that we have since learnt how to produce it in abundance within a generation; but at least we have some hypotheses, based on observation and experiment, which deserve to be tested. Thus we have reason to suppose that the newborn infant and his mother (or her substitute) form a unit, and that the normal development of the child depends on their being kept together. We also think that an infantile or over-anxious or unloving mother may affect her child's development unfavourably, and furthermore that she may herself be all or any of these things because her relations with her own parents were unsatisfactory. We recognise that no man is an island (for the mental health of all of us is bound up with our experiences as members of a group); and that, while any of us may break down under too much stress, like an ill-used machine, yet, unlike a machine, most of us have the power to adapt ourselves to severe stresses, and to a very wide range of them, provided we have some inner security and are given time to make the adjustment. Since we are born to trouble as the sparks fly upward, this last capacity is especially valuable for our health of mind. Besides, it is worth remembering that, if we are influenced by our surroundings, our surroundings are also influenced by us: both are plastic.

Over the past century the public-health movement—an outstanding example of man's influence on his surroundings—has measurably altered the physical health of our people for the better; and no doubt it has indirectly prevented some mental ill health as well. But mental health has never been a definite target in British public-health campaigns; and because of this we, the pioneers, are now some way behind other countries in this respect. For instance, on p. 142 Dr. JEAN MACLENNAN and Miss MURIEL SMALL describe how mental hygiene is taught in Vancouver; and it is noteworthy how large a part their well-trained public-health nurses play in the programme. In the United States, mental-health teaching is now a widely accepted duty of public-health departments. Dr. GERALD CAPLAN [1] reports that for more than three years the department of maternal and child health of the Harvard School of Public Health has been successfully exploring the possibilities of a team approach to the provision of health services for the family, beginning early in the wife's first pregnancy. The team (consisting of specialists in obstetrics, pædiatrics, nutrition, psychiatry, social work, and public-health nursing) tries to discover in the initial stages any physical or emotional factors which might disturb family health and stability, and to remedy them before they have done serious harm. CAPLAN [2] has had previous experience of this work, as psychiatric director of the Lasker mental hygiene and child-guidance centre of Hadassah, Jerusalem. Here the problem of teaching was complicated by language difficulties and by the widely different standards of culture of mothers attending the centre; yet group discussions, kept on a simple emotional plane, dealt with all sorts of topics raised by the mothers themselves—fear of giving birth to monsters, fear of the evil eye, fear of dying, fear of having too big a baby, sexual problems during pregnancy, desire for abortion, fear of a second birth when the first was difficult, worries about household management and about the other children, sudden aversions towards husband and family, and sudden swings of mood. Apart from these discussions, short talks were given, in the course of which the mothers were warned how common it is to feel no love or warmth to the baby for a few days or weeks after the birth, and were assured that this coldness passes. These simple measures, it was found, not only relieved the emotional tensions of the normal pregnant women but revealed those who were more deeply disturbed and needed individual treatment. There are divisions of mental hygiene and psychiatry in the school of public health both at Yale University and at Johns Hopkins—where the programmes of teaching and field demonstration are extensive. (Nothing comparable is to be found in any public-health school in this country). In the Netherlands, too, the teaching of mental health, and the training of public-health staff for this work, is well developed. Dr. A. QUERIDO, who is both the chief of the public-health section of the municipal health service of Amsterdam, and professor of social medicine in Amsterdam University, speaks of mental hygiene as an integral part of public-health care.[3]

These instances suffice to show how far other countries have advanced beyond us in the teaching of mental health. There are, however, some stirrings of life in this field, even here. Thus Prof. ALAN MONCRIEFF urged as long ago as 1950, in his Dawson Williams lecture,[4] that maternity and child-welfare centres should take up the duty of teaching mental hygiene, and he pressed for it again in his Newsholme lectures.[5] We have recently commented [6] on the report of a London County Council study group, set up by Dr. J. A. SCOTT, medical officer of health for the County of London. They made the same proposal, and suggested how it might be done; and their views were supported by a cogent plea from Dr. HEDY SYMONDS,[7] who gave examples of the types of family situation which such teaching might ease. In Edinburgh (p. 160) there is to be a campaign to educate the public in the true nature of mental illness, and to encourage the recruitment of nurses. But these seedling endeavours make but a small showing on the bareness of the land.

The original public-health movement had to fight the inertia of the whole community; and those who now wish it to cover mental health meet, it seems, some degree of inertia within the service itself. For

1. *Children*, 1954, **1**, 171.
2. *Mental Hygiene*, 1951, **35**, 41.
3. European Seminar on Mental Health Aspects of Public Health Practice. Amsterdam 1953. Geneva: World Health Organisation Regional Office for Europe, Palais des Nations. 1954. Pp. 136. Not for sale.
4. *Brit. med. J.* 1950, ii, 795.
5. Child Health and the State. London, 1953.
6. *Lancet*, 1954, ii, 1005.
7. *Ibid*, p. 1010.

this the curriculum for the diploma of public health is partly responsible. So little attempt does it make to orient the future medical officer of health to this aspect of his duties that he is often less well informed about mental health than a recently trained health visitor. Indeed, a British nurse engaged in public-health work, who attended one of the W.H.O. seminars on the subject, remarked ruefully that she did not know how she was going to get the mental-health point of view across to the doctor under whom she was working. In saying this we do not, of course, imply that the training of health visitors in mental health is by any means perfect: both their training and that of the future medical officers of health requires revision and reorientation if this work is to be done; and courses are also badly needed for those already engaged in this field. Proposals for such instruction regularly encounter opposition from those who have matured in another tradition: "what," these are inclined to ask, "can anyone tell us about the management of mental-health problems which we are not already doing on common-sense grounds?" But it is also usual, as a course proceeds, for this resistance to melt: the very common-sense of the participants leads them to accept the new approaches opened up for them. Nevertheless, as Prof. G. KRAUS [8] has suggested, where resistance is strong it may be wise to begin by training a few people only—choosing those least at odds with the notions of psychiatry—and leaving them for a time to leaven the lump of their co-workers.

"What is there to teach, anyway?" is another frequent question, and a far-reaching one; and the tentative suggestions of the L.C.C. study group hardly begin to touch on the answer. Of course the first months and years of life are important; of course the mother can do much in those years to make or mar the emotional development of her child and his subsequent mental health; and of course the maternity and child-welfare centres should accept the responsibility for teaching her what to do and—equally important—what not to do. But the causes of mental ill health do not all begin to operate at the birth of the child: some begin much earlier. Dr. G. R. HARGREAVES,[8] whose paper we published recently, shares CAPLAN's view that mental-health teaching should begin in the antenatal clinic, in time to allay the fears and anxieties of the mother during her pregnancy. Such fears, when disregarded, sometimes end in psychosis or severe neurosis which may demand months or years of treatment. At an earlier stage, HARGREAVES says, the symptoms are still plastic, and simple measures may tip the balance towards adjustment and recovery. Many fears of the pregnant woman are absurd and archaic, but they are none the less alarming on that account: it does no good, and may do harm, to pooh-pooh them. Many of her anxieties, on the other hand, are well grounded, centring on the change in human relations which the birth of a baby brings to every family. Quite simple teaching at the antenatal clinic, as well as group discussions of the kind suggested by CAPLAN, can help the mother at this time; and even the obstetrician, as HARGREAVES suggests, should be able to give such help, and be willing when necessary to seek the collaboration of a psychiatrist in bringing the mother, whole and safe, through pregnancy, labour, and the puerperium. Indeed, QUERIDO holds that the duty of the public-health service to prevent mental ill health runs throughout the lives of every one of us, and should properly embrace mothers, infants, preschool and school children, young people at work, university students, those in their working years, women at the menopause, and the aged, as well as those whose mental well-being is assailed by special hazards—such as patients discharged from mental hospitals, people living in overcrowded slums, unmarried mothers, those discharged from prisons, young delinquents, the disabled, and those suffering from diseases (such as tuberculosis and venereal disease) which affect their lives in the community. Much of the work done by our public services already has some bearing on the mental health of many of these people: the children's officers, the psychiatric social workers, and the probation officers are all aware of this side of their efforts. What is now needed is to make what is implicit outspoken, and to extend the principles of mental hygiene into every part of public-health work. It is an urgent task: not only our slums but our mental hospitals are overcrowded, and more of us are nowadays hampered by neurosis and other forms of mental ill health than by the diseases which sprang from lack of sanitation. Our sickness has changed, and public needs rather than tradition should now dictate the pattern of our public-health service.

8. *Ibid*, Jan. 1, 1955, p. 39.

Pulmonary Hypertension

PULMONARY hypertension is now a well-recognised disorder, but much remains to be discovered about its ætiology. Usually it is a complication of cardiac or pulmonary disease, but occasionally it is found in the absence of either. The normal pulmonary vascular resistance is low, and the pulmonary-artery pressure is less than the systemic, even in the presence of considerable variations in pulmonary blood-flow. Pulmonary hypertension can result either from a greatly increased pulmonary blood-flow (such as occurs with a large patent ductus arteriosus) or from an increase in the pulmonary vascular resistance. Sometimes more than one mechanism operates in the same patient, as in patent ductus arteriosus with narrowing of the pulmonary arterioles. In mitral stenosis hypertension in the lesser circulation may result either from an increase in pulmonary venous pressure caused by the increased resistance at the mitral valve, or from an increase in arteriolar resistance. Severe pulmonary-arterial hypertension is always due to reduction in the pulmonary vascular bed at the pre-capillary or arteriolar level. The causes of this reduction may be obstructive (as in repeated pulmonary embolism, various forms of pulmonary arteritis, or carcinomatosis) or secondary to pulmonary fibrosis or emphysema.

Problems in the elucidation of pulmonary hypertension centre mainly around the mechanism responsible for reduction in the lumen of the arterioles, and for the organic changes which may also be present. It has been known for some years that acute hypoxia can cause pulmonary vasoconstriction and a rise in pulmonary-artery pressure.[1 2] This mechanism may

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2. Motley, H. L., Cournand, A., Werkö, L., Himmelstein, A., Dresdale, D. *Amer. J. Physiol.* 1947, **150**, 315.

be important in patients with pulmonary heart-disease, in whom the pulmonary-artery pressure rises concomitantly with a fall in arterial oxygen saturation during an acute respiratory infection, although restoration of the arterial saturation to normal is not always followed by a fall in the pulmonary-artery pressure.[3] In pulmonary fibrosis and in emphysema, diminished elasticity of the lungs and destruction of the small blood-vessels reduces the vascular bed and increases the resistance; uneven ventilation causes anoxia, and tends to perpetuate a vicious circle which ends in established pulmonary hypertension and right ventricular failure. In addition to hypoxia, drugs such as noradrenaline may cause arteriolar constriction,[4] while tolazoline hydrochloride ('Priscol') has been said to lower the pulmonary vascular resistance in primary pulmonary hypertension.[5] GILMORE et al.[6] have suggested that the pulmonary vessels in man are under autonomic control, but this view has been challenged by LEE et al.[7] Heart-disease accompanied by an increase in arteriolar resistance may be congenital or acquired. Organic changes in the arterioles leading to reduction in their lumen are common in patent ductus arteriosus and in ventricular septal defect, but less so in atrial septal defect.[8] EVANS[9] has demonstrated arteriolar endarteritis in such cases, and on injection of the lungs post mortem has found "pruning" of the terminal branches of the pulmonary tree. Arteriosclerotic and other organic arteriolar changes have also been shown by other workers.[10 11] The cause of such changes is unknown. CIVIN and EDWARDS[12 13] have found that the fœtal type of pulmonary arteriole (in which the lumen of the vessel is less than the transverse diameter of the vessel wall) may be present in the Eisenmenger syndrome, and have suggested that the high arteriolar resistance so produced constitutes a protective mechanism which prevents the lungs from being flooded with blood under high pressure in this and other congenital disorders. In patent ductus arteriosus the pulmonary-artery pressure may become so high that the shunt reverses, or may cease entirely.

In the realm of acquired heart-disease, mitral stenosis is one of the most usual causes of pulmonary hypertension. Increased arteriolar resistance is common, and has been shown to be due both to organic narrowing[14 15] and to reversible or functional narrowing.[16 17] Narrowing is not confined to the arterioles; it has been shown by angiocardiography to occur in the small muscular arteries.[18] The cause of this arterial and arteriolar narrowing is unknown; possibly it is induced in some way by the elevated left-auricular and pulmonary-capillary pressures. Anoxia may be a factor, since oxygen inhalation has been shown to lower the resistance.[19] WOOD[20] has found that in mitral stenosis with a very high pulmonary vascular resistance there is right ventricular insufficiency rather than pulmonary congestion. Arteriolar constriction is now usually regarded as a protective mechanism which shields the pulmonary capillaries from the powerfully acting right ventricle[17 21]; but this view has been challenged by DAVIES et al.[22] These workers have shown that in mitral stenosis the total pulmonary vascular resistance can be reduced by hexamethonium bromide without producing pulmonary congestion or œdema; and they claim that attacks of pulmonary œdema are commoner in patients with an increased vascular resistance than in those without. Unfortunately their data are not sufficiently complete to show conclusively that hexamethonium acts solely by dilating the pulmonary blood-vessels through a reduction in arteriolar resistance; reduction in systemic as well as pulmonary resistance may play a part.[23] While it seems likely that an extreme arteriolar resistance shields the pulmonary capillaries at the expense of the right ventricle, this may not always prevent pulmonary œdema, nor is it necessarily beneficial.

In recent years there have been many reports of pulmonary hypertension due to an increased arteriolar resistance in the absence of congenital or acquired heart-disease or of pulmonary disease. In 1940 DE NAVASQUEZ et al.[24] described cases of right ventricular hypertrophy of unknown ætiology in which the pulmonary arterioles were normal at necropsy. DRESDALE et al.[5] in 1951 reviewed "primary" or "essential" pulmonary hypertension, which predominantly affects young people, and is characterised by symptoms and signs of severe pulmonary hypertension due to a high arteriolar resistance, without any cardiac or other pulmonary disease. WOOD[21] drew attention to the occurrence in this disorder of tiredness, dyspnœa, syncope, and even angina of effort, and of a small pulse and cold extremities, a giant "a" wave in the jugular venous pulse, right ventricular hypertrophy, narrow duplication of the second heart-sound with accentuation of the pulmonary element, and sometimes pulmonary systolic or diastolic murmurs. Cardioscopy shows enlargement of the right auricle, ventricle, and pulmonary artery, with clear peripheral lung fields. The electrocardiogram shows distinct right ventricular dominance. The arterial-oxygen saturation is initially normal but may become slightly reduced as the disease progresses; yet cyanosis, when present, is usually peripheral. Recently CUTLER et al.[25] have described seven patients with this disorder, which they have designated the pulmonary vascular obstruction syn-

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8. Swan, H. J. C., Zapata-Diaz, J., Burchell, H. B., Wood, E. H. *Amer. J. Med.* 1954, **16**, 12.
9. Evans, W. *Proc. R. Soc. Med.* 1951, **44**, 600.
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11. Old, J. W., Russell, W. O. *Ibid*, 1950, **26**, 789.
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15. Larrabee, W. F., Parker, R. L., Edwards, J. E. *Proc. Mayo Clin.* 1949, **24**, 316.
16. Bayliss, R. I. S., Etheridge, M. J., Hyman, A. L. *Lancet*, 1950, ii, 889.
17. Lewis, B. M., Gorlin, R., Houssay, H. E. J., Haynes, F. W., Dexter, L. *Amer. Heart J.* 1952, **43**, 2.
18. Davies, L. G., Goodwin, J. F., Steiner, R. E., Van Leuven, B. D. *Brit. Heart J.* 1953, **15**, 393.
19. McGregor, M., Bothwell, T. H., Zion, M. M., Bradlow, B. A. *Amer. Heart J.* 1953, **46**, 187.
20. Wood, P. *Brit. med. J.* 1954, i, 1051, 1113.
21. Wood, P. *Brit. med. Bull.* 1952, **8**, 348.
22. Davies, L. G., Goodwin, J. F., Van Leuven, B. D. *Brit. Heart J.* 1954, **16**, 440.
23. Storstein, O., Tveten, H. *Scand. J. clin. Lab. Invest.* 1954, **6**, 169.
24. De Navasquez, S., Forbes, J. R., Holling, H. E. *Brit. Heart J.* 1940, **2**, 177.
25. Cutler, J. G., Nadas, A. S., Goodale, W. T., Hickler, R. B., Rudolph, A. M. *Amer. J. Med.* 1954, **17**, 485.

drome. All had extremely high pulmonary arteriolar resistances, and at necropsy in two of the cases the pulmonary arterial tree showed patchy atheroma, the large elastic branches having hyperplasia of the media with duplication of the elastic lamina and slight degenerative changes. The muscular pulmonary arteries were the seat of pronounced subendothelial fibrosis, often occluding the lumen; many were obliterated by thrombi. The capillaries and veins were normal. GILMOUR and EVANS [26] described endarteritis fibrosa in the muscular pulmonary arteries in a case of primary pulmonary hypertension, and concluded that these changes might be secondary to the hypertension. Necropsy studies in other series [24] have not always revealed any definite vascular abnormality; and DRESDALE et al. [5] considered that the anatomical changes present in some cases might be secondary to neurogenic vasoconstriction. Cor pulmonale due to multiple pulmonary emboli has been described,[27] but CUTLER et al.[25] do not regard this as the cause in their cases. They suggest that an extremely high arteriolar resistance in congenital heart-disease (particularly ventricular septal defect) may be due to a separate, possibly genetically determined, pulmonary vascular disorder. WOOD [21] emphasises the rapid progression of primary pulmonary hypertension, but the condition of two of the patients described by CUTLER et al. did not deteriorate for twenty to thirty years. They mention the risk in such cases of sudden death, and remark that these patients tolerate any diagnostic procedure badly; one of their patients died suddenly during cardiac catheterisation.

The organic arteriolar changes found in severe pulmonary hypertension, from any cause, have features in common; the factors responsible for arteriolar constriction may also be similar. Until this mechanism is known much will remain obscure, but studies with drugs which cause arteriolar dilatation may yield further important information. Further examination of the bronchial circulation may also throw light on disordered function of the pulmonary vascular system.[28] Meanwhile it is useful to remember that the clinical picture of severe pulmonary hypertension is remarkably constant, whatever the cause, and resembles that of the "essential" type, especially in patent ductus arteriosus where the flow may be reversed and the typical murmur absent, and in mitral stenosis where the diagnostic auscultatory signs may be negligible or absent as a result of the greatly reduced flow through the mitral valve. Treatment of the pulmonary vascular obstruction syndrome is unsatisfactory, except in mitral stenosis where successful valvotomy may be followed by a fall in vascular resistance,[29] and in patients with a patent ductus which has been ligated before the shunt has ceased or reversed. Accurate diagnosis, which is often possible only by cardiac catheterisation or angiocardiography, is therefore essential. For the rest, treatment with vasodilator drugs, such as tolazoline or methonium compounds,[5 21 22] may be worth trying.

26. Gilmour, J. R., Evans, W. *J. Path. Bact.* 1946, **58**, 687.
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The Fertility of British Women

THE fears so often expressed about the ageing of our population and the decline of our birth-rate led to the appointment of a Royal Commission on Population [1] whose final paper, on the trend and pattern of fertility in Great Britain, appeared last week.[2] Though "planning" is a word which has lost a little of its pristine savour, some intelligent predictions must be made about the results of present trends in fertility and family size if our difficulties are to be anticipated and resolved. To obtain the basic data, the commission asked Prof. D. V. GLASS and Prof. E. GREBENIK to undertake a family census encompassing more than a million women in the United Kingdom. Their report on this census, conducted in 1946, has interest as much for the discussion of methods as for the results.

This survey, supported by none of the legal sanctions of a national census, relied entirely on the coöperation of individual women; public relations were therefore vital. Press and B.B.C. publicity was considerable and in the main helpful, though some papers railed against "snooping" which was "entirely repugnant to the British sanctity of the home which has hitherto been our national heritage." On the day, every tenth reference leaf was drawn from the alphabetical ration-book file at every food office in Great Britain. From that sheet the names of all apparently married or widowed women were extracted, and questionaries were despatched to them by post. These women, who formed a representative 10% sample of the national total, were asked to report their marital status, the number and dates of birth of their children, and their husband's occupation. Thirteen thousand locally recruited enumerators called on them later to collect and check on their replies. In all sample inquiries a high response ratio is essential to success; and for a voluntary inquiry of this type, the 87·5% reply was remarkable. A personal letter from the chairman of the commission, emphasising the importance and confidentiality of the inquiry, produced a response from some of the more reluctant. No contact could be made with women who existed only in the imagination of those who profited by their ration books, while in some sections of London there was little hope of finding women "at home" at an accommodation address, even in the required three calls. In the second week of the census coincidental announcement in the House of Commons of the end of the supply of dried eggs and the cost of the family census stirred up adverse comment, and this caused a sharp acceleration in the usual increase in the non-response rate which comes with deepening apathy and resistance. Response-rates differed according to the region of the country; surprisingly, the Northerners proved particularly docile, while the worst response-rates were in the larger urban areas where problems of contact were greatest. Coöperation depended, above all, on the interviewer, who did best when he combined previous experience with subtlety of approach—as in the enumerator who

1. Report of the Royal Commission on Population H.M. Stationery Office, 1949. See *Lancet*, 1949, i, 1105, 1110.
2. The Trend and Pattern of Fertility in Great Britain: A Report on the Family Census of 1946, by D. V. GLASS and E. GREBENIK. Part 1: Report. Part 2: Tables. H.M. Stationery Office, 1955. Pp. 306 and 253. 70*s*. the pair.

appealed to the sense of solidarity of the working-classes by pleading that he was only trying to earn the honest fifteen coppers which were paid for each completed schedule. Corrections were made for the major differences between regions and population-densities by duplicating or rejecting records at random so as to bring local response-rates into line with the national average of 87·5%.

Some cross-checks between the results of the family census and national vital statistics convinced the authors that the sample obtained was in fact reasonably representative, and that conclusions could be firmly based on it. The survey showed that between 1870 and 1925 the number of live births per woman declined by 62% from 5·8 to 2·2. More striking perhaps, is the virtual elimination of the large family; in the late 19th century three-fifths of all families consisted of five or more children; but in the 1920s most families were of only one or two children, and childlessness had doubled in frequency. Fertility varies with age at marriage and with social class. Although the professional classes, with their small families, do tend to marry late, late marriage does not fully explain the rise in family size from 1·6 among salaried employees and 1·97 among non-manual wage-earners to 3·35 among industrial labourers. Indeed, age at marriage and family size are related only in so far as they are both expressions of the complex of social attitudes which distinguish one class from another. That these social attitudes are not fixed and immutable is shown by the changes in reproductive behaviour even within the same social grouping in the last fifty years; the wives of employers married in the '90s had just as large families as the wives of unskilled labourers married in 1920–24. Again, not only have families become smaller, but the space of years in which families have been completed has contracted, and the birth-rate has fallen most notably in the period after the first ten years of marriage.

Long-range population predictions are at best an educated guess. GLASS and GREBENIK are therefore cautious in their projection of future trends from past events; but they point out that ultimate family size, which fell steadily up to 1930 and maintained an uneven stability thereafter, now shows a slight upturn. Because of the improving mortality experience and realisation, from these data, that family limitation is already widely practised in all social classes, they feel reasonably confident that continuation of current fertility-rates will achieve the desired effect of population stability.

Annotations

CEREBRAL ARTERIAL DISEASE

THERE has long been uneasiness about the classification as "congenital defect" of the change underlying aneurysms of the circle of Willis. This concern was voiced most strongly by Glynn,[1] who pointed out that in the circle of Willis congenital defects were eighty times as common as aneurysms. Some additional factor, he insisted, must be involved in the formation of aneurysms. He showed that the defects were not in fact weak spots and did not bulge or break when after death the vessels were overdistended at pressures about three times the normal systolic pressure. The fact that they were far commoner in adults than in infants does not exclude a congenital origin, since growth and rise in blood-pressure could make manifest minute fundamental defects. In fact, berry aneurysms are associated with coarctation of the aorta and polycystic kidneys[2]—conditions in which there are hypertension and other congenital defects. Forster and Alpers[3] have recorded the case of a 13-week-old infant with unruptured aneurysm and polycystic kidneys. This strongly suggests a congenital origin—a clear-cut malformation of the vessel, possibly through the mechanism described by Dandy, whereby the many small vessels present in the early embryo fail to concentrate into the one main trunk of the normal adult. This is in keeping with the observation that abnormalities of the circle of Willis are more usual in patients with aneurysms than in those without. If this is really the mechanism the congenital abnormality is the whole aneurysm, not merely the weakness in the wall: hypertension enlarges and may rupture the persistent abnormal vessel, but it is not entirely responsible for the formation of the aneurysm out of a minor defect. Handler and Blumenthal[4] have reported inflammatory changes in the basilar artery and suggested that these are related to the formation of aneurysms. This does not accord readily with the usual picture of a clean break in the aneurysmal wall. Moreover the basilar artery is not a usual site of aneurysm, and no exciting causes have been found for this peculiarly local inflammatory reaction. The well-known mycotic aneurysms of infective endocarditis are clearly unrelated to the aneurysms which are the usual source of subarachnoid hæmorrhage. The reaction seen by Handler and Blumenthal is probably secondary to local degenerative plaques.

Current ideas on atheroma have been severely handled by Duguid and by Crawford, who have shown the inadequacy of the hypothesis of simple lipoid imbibition and secondary medial changes from pressure. Blumenthal et al.[5] have taken up the question of localisation of atheromatous patches in the larger cerebral arteries. Although the total quantity and distribution of atheroma in various arteries may vary enormously, if present it occupies standard places and configurations; and Blumenthal and his colleagues have shown a correlation between tension on the wall and plaque formation. They do not appear to have fixed the arteries they measured in a state of distension to the normal pressure. Crawford and Levene[6] have shown the great difference this makes to the picture; the apparent bulge of atheroma into the lumen is then replaced by a bulge into the media. The problem of atheroma is thus being approached from two angles—the metabolic and the mechanical. Blumenthal clearly regards arteriosclerosis as an adaptive response rather than a primary degeneration: the bulky local accumulations of fatty material would follow rather as aberrations of repair than as defects in normal intima, and the prevention of atheroma would have two steps—the avoidance of strains in the arterial wall requiring repair, and the avoidance of lipoid accumulations in these areas of repair. The two parts of this mechanism, which are not necessarily related, fit the known correlations of atheroma with increased blood lipids and with prolonged arterial hypertension.

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3. Forster, F. M., Alpers, B. J. *Arch. Neurol. Psychiat.* 1943, **50**, 669.
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5. Blumenthal, H. T., Handler, F. P., Blache, J. O. *Amer. J. Med.* 1954, **17**, 337.
6. Crawford, T., Levene, C. I. *J. Path. Bact.* 1953, **66**, 19.

THE RESTFULNESS OF CHANGE

"Volumes are now written and spoken upon the effect of the mind about the body. Much of it is true. But I wish a little more was thought of the effect of the body on the mind."

IN setting down this perennially modern reflection, Florence Nightingale [1] was considering the havoc a sick body can play with mood and judgment. Those who "think that 'with a little more self-control' the sick might, if they choose 'dismiss painful thoughts' . . ." fail entirely, she held, to realise what they are asking of the patient: "Almost every step that crosses his room is painful to him; almost every thought that crosses his brain is painful to him; and if he can speak without being savage, and look without being unpleasant, he is exercising self-control." It is therefore the business of his attendants to alleviate his depressed and irritable state by satisfying the "craving for variety in the starving eye"—giving him not merely a "judicious variety" of flowers, but a pleasant view, and pleasant things about him.

We do not give much thought to this principle in hospitals nowadays. Flowers are certainly present, but there is little other attempt to provide variety: hygiene, in fact, has ridden roughshod over psychology. The patient in the public ward suffers less in this respect than the patient in the private ward: for the patient in the public ward can at least refresh his eye with a variety of nurses, a variety of fellow patients, and a variety of nursing techniques as well. This may not be quite what Miss Nightingale had in mind, but they are better than the blank wall set with glazed lavatory-tiles which often confronts the patient in a private ward. The craving for the return of day, she suggested, is often nothing but the desire for light, "the relief which a variety of objects before the eye affords to the sick mind." When these objects lack variety the mind gets no respite; and to this she attributed the depression so commonly seen in the chronic sick "subjected to a long monotony of objects about them." She might have added that the daily inspection of a blank tiled wall sometimes suffices, within a week or ten days, to convert a convinced optimist into a practising pessimist.

Would she had thought that the need for variety (with a small "v") is sufficiently met by the broadcast programmes dispensed to hospital patients? It is doubtful; for, like so many of us, she seems to have been a "visual type," accounting sight the prince among the senses. Does television perhaps supply the kind of nourishment the eyes of the sick crave? It is difficult to place a television screen so that all the patients in a ward can easily see it; and there will always be some for whom the content of a given programme lacks appeal.

Miss Nightingale proposed, as she so often did for other problems, a simple and practical solution. The ward, whether public or private, is no place for a medley of agreeable knick-knacks; on the other hand its walls offer ample hanging space for pictures, and these can be changed. The changes need not be made unduly often: she pointed out that if you show a patient ten or twelve pictures in rapid succession you merely make him tired or feverish; "but hang one up opposite him, one on each successive day, or week, or month, and he will revel in the variety."

Some hospitals—but not many—have already had frames fixed to the walls into which pictures can be slipped, and they either keep a supply of good reproductions which are placed in these frames in rotation, or else they make use of the circulating library of pictures provided for hospitals by School Prints Ltd.[2] This service was established about a year ago, and is steadily gaining supporters.

School Prints send a set of six pictures at a time, mounted on hardboard and varnished (but unglazed), so edged that they have the appearance of being framed. They are thin enough to collect little dust, and are in any case easily wiped over with a damp cloth. Each carries a small neat label giving the name of the picture, the name and nationality of the artist, and his dates. Each set of pictures includes one showing people (a portrait or a scene with characters), two landscapes, two sea or river scenes, and one decorative subject; one at least of these is by an old master, and the rest are by later or living artists. At the end of four months a new set of six pictures arrives, and the original six are packed up and sent off to the next hospital on the rota.

Some hospitals—Orsett,[3] in Essex, for instance—have had murals painted, which give gaiety and variety to the wards. Miss Nightingale, rightly or wrongly, believed that such refreshments to the mind act also on the body. "Little as we know," she wrote, "about the way in which we are affected by form, by colour and light, we do know this, they have an actual physical effect. Variety of form and brilliancy of colour in the objects presented to patients are actual means of recovery." She was a capital observer, and her advice, even after a hundred years' delay, is well worth taking.

DEFORMITIES OF THE CHEST WALL

CONGENITAL deformities of the anterior chest wall fall naturally into one of two groups—the protrusional and the depressional. The protrusional deformity is probably due to rib overgrowth. When this is bilateral the sternum protrudes; when unilateral the ribs are unusually prominent at the costochondral junction. Patients with this type of deformity have restricted chest expansion, and movement of the diaphragm may also be affected. The deformity may be treated surgically either by subperiosteal resection of the sternum, or by resection of the costal cartilages, after which regeneration is allowed to occur in the normal position. Lester [4] has described 22 cases in which patients underwent operations of this type; and he assesses the results as largely satisfactory.

Depression of the chest, which is commoner, is usually associated with shortening of the central tendon of the diaphragm and backward curvature of the sternum. Evans [5] has studied the cardiac changes associated with this deformity. Most of the patients have a systolic murmur and an abnormal cardiac outline on radiography, associated with narrowing of the space between sternum and thoracic vertebræ. Lester has operated on 90 patients with sternal depression. In infants the deformity may be relieved by excision of the xiphoid and the 7th costal cartilages. In children and adults a more radical operation is necessary. The 3rd–7th costal cartilages are resected, and a transverse-wedge osteotomy is made across the 3rd sternal segment. The xiphoid is removed and the body of the sternum elevated. The sternum may be retained in position either by stainless-steel wires passed behind it and tied to an anterior support, or by using a section or rib as a strut.[6] The results of these 90 operations are said to be functionally good, but 1 patient died and 4 required reoperation. In this country Chin and Adler [7] have operated on 10 patients with funnel sternum. They suggest that operation should be advised for all children over the age of 6 months and for adults with symptoms due to this deformity. They find that the sternum can be freed from the diaphragm and after osteotomy can be retained in an over-corrected position without external fixation. The costal cartilages are removed if they are deformed.

1. Selected Writings of Florence Nightingale. Compiled by LUCY RIDGELY SEYMER, M.A., S.R.N. New York and London: Macmillan. 1954. Pp. 397. 35s.
2. 13, Motcomb Street, London, S.W.1.
3. *Lancet*, 1947, i, 840.
4. Lester, C. W. *J. Amer. med. Ass.* 1954, **156**, 1063.
5. Evans, W. *Brit. Heart J.* 1946, **8**, 162.
6. Daily, J. E. *J. Amer. med. Ass.* 1952, **150**, 1203.
7. Chin, E. F., Adler, R. H. *Brit. med. J.* 1954, i, 1064.

Many years must pass before the results of such operations can be assessed. If the depression is really due to shortness of the diaphragm, then the deformity may recur as the fibres of this muscle find a new attachment; and if they fail to become reattached, late herniation may ensue. In few patients are the symptoms due to funnel sternum severe enough to demand surgical relief, although operative correction may ultimately be justified on cosmetic grounds alone.

ATTEMPTED SUICIDE—AND AFTER

Batchelor and Napier [1] have followed up for a year the fate of 200 patients who had been admitted to an observation ward in an Edinburgh general hospital for attempted suicide. They traced all but 1, and their findings should be valuable not only to psychiatrists but to general practitioners. Their series comprised 92 men and 108 women; the commonest diagnoses on admission were "depressive state" (41 men, 71 women), and "psychopathic state" (25 men, 17 women); epilepsy, schizophrenic and paranoid reaction, organic reaction types, and mental defect contributed much smaller numbers. The ages ranged from fifteen to over seventy years; the largest number for any decade was 48 (22 men, 26 women) aged twenty to twenty-nine, though the next three decades with 38 (17 men, 21 women), 31 (17 men, 14 women), and 37 (16 men, 21 women) were well represented. 106 patients (53%) were kept in the general hospital for a week or less, 69 (34·5%) for one to two weeks, and 25 (12·5%) for longer. Of this last group three-fifths were discharged home. 6 (3 men, 3 women) died in the observation ward, 3 from advanced disease of the central nervous system, and 3 from respiratory or cardiovascular disease. Of the remaining 194, 114 (51 men, 63 women) were discharged home, 48 (21 men, 27 women) were transferred as voluntary patients to mental hospital, and 7 (2 men, 5 women) were transferred under certificate; 22 (13 men, 9 women) were transferred to a neurosis clinic or nursing-home; and other disposals totalled 3.

57% of patients were discharged home, compared with 57% also in Hopkins's [2] series and 20% in Stengel's.[3] Batchelor and Napier point out that the majority were discharged home after less than a fortnight in the observation ward; but each case was thoroughly investigated, and 61% continued to attend under their care as outpatients. They believe that their "rather free policy" was justified by its results. During the year 4 of the patients committed suicide, and 3 of these had been in the mental hospital; the 4th suicide and 7 other patients who made further unsuccessful suicidal attempts "belonged to the chronically temperamentally unstable group for whom we have at present no effective treatment or suitable provision." The Edinburgh workers consider that mental-hospital care is needed chiefly for attempted suicides with depressive, schizophrenic, and paranoid psychoses, and more often for those past middle age than for young people; automatically to send every attempted suicide into a mental hospital is not only unnecessary but wasteful of mental-hospital beds. But they emphasise the serious suicidal risks accompanying the depressions of late middle age and of old age, especially when the depression has been initiated by the breakdown of a relationship characterised by intense possessive love, with resultant hostility towards the loved person leading to severe guilt-feelings. At the close of the year only 13·5% of the patients were in mental hospital; 76% were at home, and 59% were at work.

Discussing "social reverberations," Batchelor and Napier agree with Stengel that in some instances attempted suicide may be in the nature of an appeal to family or friends to come to the rescue when the patient is at his wits' end; but they point out that some melancholics seem completely self-absorbed. They insist that the patient who has attempted suicide needs not only a chance to recover in a sheltered environment but help in fitting himself once more into his social setting. The near relatives, too, may need help; in many cases the disturbance to the family dies down quickly, but in about 15% of cases the families were emotionally disturbed for some months. 3 relatives had to be treated psychiatrically, and 1 woman tried to commit suicide seven months after her sister had done so.

It is a pity that this excellent paper does not include data on social and family background or marital status, which must surely have influenced Batchelor and Napier in their "rather free policy"; but no doubt they will further explore the lode they have opened up.

1. Batchelor, I. R. C., Napier, M. B. *J. Neurol. Psychiat.* 1954, **17**, 261.
2. Hopkins, F. *J. ment. Sci.* 1937, **83**, 71.
3. Stengel, E. *Proc. R. Soc. Med.* 1952, **45**, 613; see *Lancet*, 1952, **1**, 1059.

GENITO-URINARY INFECTIONS WITH HÆMOPHILUS

MANY bacteriologists will learn with surprise of the claim by Gardner and Dukes [1] to have isolated a new bacterium which they regard as the cause of most cases of non-specific vaginitis. They state that a previously unidentified and unclassified hæmophilus has been isolated as the predominant or only organism from 81 of 91 such infections. From a clinical study of the cases, in 62 of which the hæmophilus was the only organism present, Gardner and Dukes report as evidence of a specific disease-entity that the vaginal discharge is grey, thin, homogeneous, offensive in smell, and less acid than normal vaginal secretion, and that itching and irritation are seldom prominent. They reproduced the disease in volunteers by direct inoculation with infected vaginal material and pure cultures of the hæmophilus. Direct films of the discharge showed abundant, short, pleomorphic, gram-negative rods which could be cultured with some difficulty in an atmosphere of carbon dioxide and only on "proteose-peptone No. 3 agar" containing 10% sheep blood. The organism was sensitive to the tetracycline group of antibiotics and to sulphonamides. Administration of these drugs by mouth or into the vagina eradicated most of the infections. A complete account is to be published [2]; and most will prefer to reserve judgment about the novelty and the causal rôle of the hæmophilus until the full report has appeared.

Meanwhile, the brief description of the organism inevitably recalls a rather similar account by Leopold,[3] who reported the frequent isolation from urine and cervical swabs, by strikingly similar cultural methods, of a hæmophilus which was hæmolytic. In males the presence of the organism in the urine was associated with mild prostatitis with or without urethritis; in women there was an association with cervicitis. Leopold found the organism in the urines of 53 of 965 unselected men and of 2 of 18 men with a previous history of non-specific urethritis; in 16 of 58 cervical swabs; and in the urines of 4 of 9 men whose wives had positive cervical cultures.

Few bacteriologists nowadays expect to discover a hitherto-undescribed bacterium as the cause of an infection. But possibly they have too readily abandoned this type of search to the virologists. There is some danger of discovering only the bacteria that are expected in any disease-process, because the methods of culture applied are those best designed to isolate such organisms and to discourage as many others as possible. Whatever may be the final judgment of the new claims, there would seem to be no insuperable difficulty in the way of attempting to repeat the observations of Gardner and Dukes.

1. Gardner, H. L., Dukes, C. D. *Science*, 1954, **120**, 853.
2. *Amer. J. Obstet. Gynec.* (in the press).
3. Leopold, S. *U.S. Armed Forces med. J.* 1953, **4**, 263.

Special Articles

THE WORK OF A MENTAL-HYGIENE DIVISION IN A PUBLIC-HEALTH DEPARTMENT

JEAN M. MACLENNAN
M.D. Edin., D.P.H.
HEALTH UNIT DIRECTOR, VANCOUVER; FORMERLY SENIOR ASSISTANT MEDICAL OFFICER OF HEALTH, HENDON

MURIEL E. SMALL
R.N., B.N. McGill
ASSISTANT UNIT SUPERVISOR, VANCOUVER

THE view is now widely accepted that mental hygiene is the proper concern of a public-health department. The prevention of all forms of preventable illness and disability is the natural aim of a truly comprehensive public-health service. Within the scope of such a comprehensive service come many forms of psychological and emotional disorder. The methods of prevention of psychiatric disabilities are various, for they are not yet as well tried and standardised as those used in the prophylaxis of infectious diseases, for example. So a description of the functioning of one mental-hygiene division within a public-health department may be attempted for reasons of comparison and review.

The public-health worker is not inclined to invade the already well-cultivated field of psychiatric treatment. He would be content to leave therapy with those whose particular interest it is and to concentrate his own efforts upon his own territory in "the recognition and eradication of factors in the community which are harmful to the healthy psychological development of individuals" rather than in "the treatment of the results of those factors." [1] However, psychiatric treatment of children can be very time-consuming, and the sooner emotional difficulties and unhealthy attitudes to other people are recognised the more easily they are corrected. The natural division seems to be not between therapeutic and preventive services but between clinics which offer intensive therapy and those which offer guidance and "superficial" therapy. Furthermore, in staff education in the principles of mental hygiene, case-studies under supervision are a sine-qua-non: thus with a basically preventive orientation the public-health worker still finds himself doing a fair amount of treatment.

THE METROPOLITAN HEALTH DEPARTMENT

In Vancouver, the mental-hygiene division of the public-health department was set up in 1939. An integral part of the health department, it functions like an "enzyme system," permeating the work of other divisions within the department and through them the health of the community as a whole. Its activities can be more pervasive than those of a child-guidance clinic which operates within an education department and is—administratively as well as in orientation—more confined.

The health department is set up on a metropolitan basis to include the spreading urban area of Greater Vancouver. The Metropolitan Health Committee, which directs the department, is composed of elected representatives from the City of Vancouver and five surrounding municipalities, together with the university area and another smaller area of the adjoining part of the province of British Columbia. The population served was estimated, in 1953, at 522,030. The population of the City of Vancouver itself was 390,325 for the same year. The whole of this urban and suburban area exceeds over 248 square miles.

The work of the health department is centralised in the City Hall, from which many of the services operate. The personal health services and sanitary inspectorate are directed peripherally from seven "health units," four of these being within the City of Vancouver and the other three covering surrounding areas.

The total staff of the health department comprises 253 professional and lay officials, including 13 full-time and 3 part-time medical officers, 114 public-health nurses, 36 sanitary inspectors, 19 dentists, 2 psychiatric social workers, 2 psychologists, 2 nutritionists, and 2 audiometrists, all under the general direction of the Senior Medical Health Officer.

The work of the medical health officers and of the public-health nurses is diverse, covering school health services and kindergartens, child-welfare work and child-health centres, immunisation and communicable disease control (including tuberculosis and venereal disease, in coöperation with the provincial departments of tuberculosis and venereal disease control). Mental hygiene work is carried out in relationship to these other activities and absorbs an increasing amount of time and attention. Frequent staff meetings are held both in the health units and at the City Hall.

Each health unit is led by a medical health officer, who is the "unit director," and by a senior public-health nurse, who is the unit supervisor. In the larger units there are also assistant unit supervisors. The number of public-health nurses attached to each unit varies from 4 to 17 according to the population and needs of each area.

OTHER AGENCIES

The staff of the metropolitan health department furnish school services to the "public schools" (i.e., those which are publicly provided and administered by the boards of school trustees of the City of Vancouver, and of the other municipalities of the metropolitan area). Approximately half the time of the unit directors and of the other full-time medical officers and of the public-health nurses is devoted to school work. Certain "non-board schools" are also provided with health services: these are essentially church schools.

The provincial government of British Columbia, as the major health authority, has its divisions of tuberculosis control, venereal-disease control, epidemiology, child guidance, and others in its health department, and the metropolitan health staff work in close coöperation with these. The child-guidance clinic of the provincial health department has its headquarters in Vancouver. It is more concerned with treatment than is the mental-hygiene division of the local health department, which has prevention as its primary objective. It will be understood therefore that these two agencies tend to attract a rather different case-load, and that cases may be referred from the metropolitan mental-hygiene division to the provincial child-guidance clinic. The strict line of demarcation between prevention and treatment, however, has been somewhat erased, and the local health department has assumed perforce a minor rôle in "treatment."

The work of the metropolitan health staff is greatly assisted by the local medical profession in private practice and by the hospitals. The Health Centre for Children at the Vancouver General Hospital is particularly valuable to the children of the city, providing a wide range of outpatient and inpatient facilities. The director of the mental-hygiene division is an attending psychiatrist on the staff of the Health Centre for Children, and a director of one of the health units is attached to its staff as a pædiatrician in the outpatient department. A senior member of the staff of the Health Centre acts as consultant in cardiology to the metropolitan health department. A public-health nurse of the metropolitan staff is employed full-time in the health centre as a "liaison" public-health nurse. The local health department is thus linked clinically with the teaching hospital

1. W.H.O. Technical Report, no. 9. 1950.

in its pædiatric functions, and has a small share in the training of medical and nursing students in child care.

The metropolitan health department provides instruction to students in various faculties of the University of British Columbia—including medicine, nursing, and home economics. Its staff works closely with the Victorian Order of Nurses (domiciliary nursing service), the Children's Aid Society (child-life protection), the city social service department (relief of indigents), the Crippled Children's registry, the B.C. Tuberculosis Society, and many other voluntary and municipal organisations.

THE MENTAL-HYGIENE DIVISION

The staff of the mental-hygiene division, engaged whole-time in this work, comprises a director and assistant director who are specialists in psychiatry, two psychiatric social workers (a man and a woman, the latter being also a qualified public-health nurse), and two psychologists. The director is also director of the school health service for the city of Vancouver. He and his assistant director conduct the mental-hygiene clinics which operate in the various health units. The psychiatric social workers are engaged mainly in reinforcing and guiding the work of the public-health nurses in the schools and homes; they take a prominent part in staff education.[2] The psychiatric social workers also carry out individual case work on a limited number of cases.

The psychologists work very closely with the psychiatrists in the mental-hygiene clinic, assisting in the diagnosis, carrying out psychometric examinations, and providing therapy. The psychologists also coöperate with the medical officers and public-health nurses in certain selected child-health centres, seeing particular cases referred to them and reviewing the progress of apparently normal healthy babies. These members of the mental-hygiene team work in the closest relationship with the public-health nurses, medical officers, the unit directors, and the unit supervisors. The medical officers and the public-health nurses bring-forward the problems and the environmental and social data, while the staff of the mental-hygiene division coöperate in furnishing a diagnosis and recommendations, which are carried out jointly by the staff members concerned. Thus from the mental-hygiene division the stream of thought and energy and action flows out via the units into the schools and the homes where the children of the rising generation are being educated and nurtured. Directly and indirectly the school staffs are affected. Parent associations are coming increasingly into this community of thought. Through formal lectures, discussion groups, or round-table conferences other interested bodies are reached —e.g., church groups, racial associations, university conferences, and others.

At the periphery the public-health nurse and medical officer go about their daily routine in schools, child-health centres, and clinics. The work of the public-health nurse also takes her into the homes of the people through visits to tuberculous patients, young infants, expectant mothers, and others in need of her services. Daily contacts with teachers and pupils in the schools, with mothers in the child-health centres, and with families in their homes, keep the public-health nurses in constant touch with the problems and needs of their patients. Most of the referrals to the mental-hygiene clinic come from the public-health nurse or the medical officer: they may come from the teacher or from the parent to the public-health nurse in the first place. More and more cases are being referred by private medical practitioners, and occasionally cases are referred by other social agencies.

2. Gundry, C. H., Hunter, T. G., Itskow, H. *Mental Hygiene*, 1953, 37, 47.

THE MENTAL-HYGIENE CLINIC

The mental-hygiene clinic is the main focus of all this activity. It is primarily a clinical consultation which culminates in diagnosis and recommendations for treatment, but its usefulness is not limited to the needs of the individual case. Thus it has a most important educational function, particularly for the new recruits to the public-health nursing and medical services. Where a school child is concerned, its impact is felt in the schools, for the child's teacher and school principal are usually present when the case is presented at the conference which follows the clinic session.

The clinic is held, as a rule, once a week in each of the health units. One psychiatrist and one psychologist are always present, and the psychiatric social worker may be present for a varying amount of time. Usually 3 cases are dealt with at each session. The consultations and examinations are held in the morning while the case-conferences are convened in the afternoon. Those seen are usually school-children, mainly aged 6–10. In 1953, 254 new cases were seen.

In the preparation of the case several visits have to be made to the home by the public-health nurse, who then prepares a detailed case-history, which includes an extensive family history as well as an account of the relationships of the child at home and in school. Wherever possible she talks to both parents and in some cases to other relatives living in the home.

At an early stage, the child is referred to the medical officer if he has not recently seen him. The unit director may contact the private practitioner where necessary, and the public-health nurse is also in touch with other social agencies which may have been concerned with the family. (A useful organisation for this purpose is the Social Service Index where social agencies, including our own, register the names of persons who have applied for advice or assistance). The school authorities are also requested to furnish their report and this is made out in detail by the child's teacher, covering academic achievement and social adjustment as well as the results of any intelligence tests which have been given at the school.

At the clinic, the child and one or both parents are seen by the psychiatrist, who includes a full physical examination of the child in his evaluation of the case. Thereafter the child and parents are interviewed separately by the psychiatrist. While the parents are consulting with the psychiatrist, the child goes to the psychologist for examination and observation.

The relevant findings from these examinations are presented along with the other material data at the case-conference, which is held in the afternoon. It is usually possible to indicate the problem in general terms without divulging personal matters which are best left as confidential details on the file.

In addition to the staff of the clinic, there are present the public-health nurse, the unit director, the unit supervisor or assistant unit supervisor, and also any of the following who are concerned in the case—class teacher, school principal, social worker of any other social agency which may be involved, and also occasionally students in postgraduate nursing courses. The problem is unfolded, usually by the public-health nurse or—if the problem has arisen initially in the school situation—the child's teacher and the school principal. The psychiatrist, as chairman, calls on the persons who can contribute to the discussion. The psychologist's account is always important. In some cases a good deal of the background is known only to the family doctor, who is invited to the conference but is rarely able to attend; in such cases his report will have been submitted to the unit director. The conference may occupy thirty minutes or up to an hour or more, the psychiatrist coördinating the discussion, and bringing out the main points in diagnosis, and recommendations for further action. These are set out concisely but in some detail in the written report which is transmitted by the psychiatrist to the unit director after the conference. A copy of this report is sent to all the agencies who may have an interest in the case—e.g., the school or kindergarten, the family doctor, the school board, and various social welfare agencies.

THE PUBLIC-HEALTH NURSE

In the whole mental-hygiene programme, the public-health nurse is the key figure. If the mental-hygiene division is a sort of enzyme system, then in order to get the enzymes (or mental-health principles) working actively to bring about change in the classroom and the home, the nurse must take them there. Similarly, if the division is to continue to function it is the nurse who must be the case-finder, bringing in fresh material for the triple purpose of education, prevention, and therapy. Indeed, the main efforts of the whole division are directed towards equipping the nurse more fully for her task, and guiding and sustaining her as she carries it out.

1. The public-health nurse is ideally situated to act as a potent force for mental health *in the community*, first because she is there, and secondly because she has in most cases no hurdle to take to be accepted as a "helping person"—she has been that from way back. She knows the family in their own setting, and she is aware (or soon becomes so) of their limitations, their difficulties, their weaknesses, and their strengths. To translate principles into practice in all sorts of varied situations is her traditional function. If, then, she herself is imbued with mental-health principles, equipped with techniques of interviewing, and has a sound knowledge of the dynamics of development and behaviour who can more persuasively teach, guide, and support the parents of the growing generation?

2. *In the schools*, too, where part of her every day is spent, she can help the teachers to understand Johnny's behaviour in terms of his needs, and assist them in attempting to meet these. She can make them aware of underlying causes in his background, and thus enable them to deal more understandingly and effectively with him.

3. In her work *in the child-health centres* she puts the same principles and the same equipment into action. In her individual conferences with the mothers she has a unique opportunity to teach the known facts of normal growth and development, not in a remote academic way, but focused on this particular child as he is now. For "visual aids" she needs little more than the baby himself. It is in this setting, too, that she learns to detect unwholesome attitudes that may lead to later difficulties in the parent-child relationship. This has been termed "anticipatory guidance," and our attempts to introduce this concept into our baby centres have already been described.[3]

4. Mental hygiene is not a tool to be applied to special cases but a way of working in all situations where one deals with people. Some graphic illustrations of this have been given *in the field of tuberculosis*.

A young married man, father of a small child, had a case-history that read like the dossier of an incorrigible. All workers had found him hostile and uncoöperative, and he had built up a tremendous hostility towards all agencies, institutions, and workers. He refused to carry out any of the procedures outlined for him, or to attend his X-ray appointments. A new nurse fell heir to him and having read her predecessors' reports, decided to seek help before making her first visit. She discussed the case with the psychiatric social worker, a member of the mental-hygiene division. They talked about the possible reasons for this man feeling as he did, and the need to begin with an unconditional acceptance of his attitude, and complete absence of any criticism or attempt at direction. The nurse visited, introduced herself, and let him talk—which he did at great length, venting his frustrations, his resentments, his humiliations. She resisted any temptation to argue, defend, cajole, or coerce. At the close of the interview the patient was speaking quietly and with self-respect, and ended by asking the nurse to make a new appointment for him, leaving the way open for further planning.

3. Gundry, C. H., Hall, B. E., Hunter, T. G. *Public Health Nursing*, July, 1952.

The emotional balance of the tuberculosis patient is almost always affected to a greater or less degree. The nurse who realises this, accepts it and has the courage and vision to postpone her immediate objective and apply her knowledge of human behaviour, will do more effective work. In this field all the knowledge and skill acquired through her mental-hygiene work in the clinic and in staff education can be put into practice.

5. When a case is being referred to clinic her task is much more formal, time-consuming, and exacting. *The preparation of a case for referral*, and *the subsequent follow-up*, when these are well and truly done, demand all that a nurse has in the way of observation, knowledge, skill, and patience.

(*a*) Children are often referred to her by the teacher. It may be that a child is not working to capacity, is day-dreaming and withdrawn, or is over-aggressive and attention-seeking. The teacher discusses the situation with the nurse, and pooling their knowledge of the child, they talk over ways of handling it. The nurse makes a home visit and after further discussion with the principal and teacher it may be decided to offer the parents the services of the clinic. It would be tedious to dwell at length on the factors basic to this decision, but briefly they are the nurse's need for further guidance, the parents' recognition of the problem, their desire for and ability to benefit from help. However, this is more or less ideal, and sometimes cases are brought in where the parents are obviously a lost cause and plans must be made to help the child without counting too much on them. In other words there are some cases—as there are in all big cities—where the prognosis for building family strengths is poor, and emphasis must be on therapy for the child.

Either before or after the decision to refer the case to clinic the nurse makes a number of home visits during which she obtains the information necessary to write up a fairly comprehensive social history. Writing the history is often regarded as a tiresome chore, but the nurses have found that the interviews incidental to this, and the putting together of the history itself, clarify the whole problem, and that by the time the case comes to clinic both she and the parents have a much better idea of just where they need the psychiatrist's help. The history varies in length, depending to some extent on the complexity of the problem and the individual style of the nurse. A social history guide has been drawn up by the mental-hygiene division to help the nurse in gathering her data, and in constructing the history. Help may always be had, too, from the psychiatric social worker and the nursing supervisor.

The nurse takes an active part in the case-conference, presenting the case, summarising the details of the strong personal relationship she has made with the family, and giving her reasons for bringing the case in. Everyone else then joins in, and at the end of the conference the diagnosis is usually made, and a plan of action agreed upon. Afterwards the whole thing is summarised in the psychiatrist's report, which is filed with the history, together with any other relevant matter, such as reports from another agency, and from the child's doctor, and the results of psychometric tests.

(*b*) Unless otherwise decided at the conference, the follow-up of the case is in the hands of the nurse. Occasionally the psychiatric social worker may be asked to work with the family on a case-work basis, or the case may be handed over to another agency, for example, the child-guidance clinic, the Children's Aid Society, or the Family Welfare Bureau. In the great majority of cases, however, it is the nurse who carries on, continuing to visit the home regularly, and seeking to interpret and help implement the clinic's recommendations both there and in the school. This is sometimes on a very long-term basis, continuing throughout the child's school life, with progress notes written periodically and reassessments of the case in clinic as indicated. If the family moves or the child is transferred to another school, the history is forwarded to the nurse who takes over.

There is a great variation in case-loads, of course, and also in the amount of time and effort spent on the individual cases, and on the work as a whole. In addition to all the expected variables (such as the severity of the problem, the responsiveness of the parents, and the stability of the community), there is the temperament and interest of the nurses. Some show a great natural facility for this work; others find it difficult, and show more or less resistance, generally due to a lack of confidence in their ability to tackle this kind of work. But

all are interested, and with the increasing emphasis on this whole field, both in preparation and in in-service training, there has been over the years an increasing awareness, ability, and sureness shown in the nurse's work. For evidence of this one has only to glance through the old files and compare the sketchy history and sparse follow-up work of ten years ago with those of today. One cannot help but be struck by the growth in understanding, the sharpening of observation, and the increased competence of action, or in some cases the wise withholding of action.

This outline of the rôle of the public-health nurse in the mental-hygiene work of this agency would not be complete without some reference to *group discussions*. The more or less informal but regular "get-together" of a few people for the purpose of learning by discussion is being found effective in many fields. Arranging such discussion is not yet an established part of the public-health nurses' rôle, but the few attempts that have been made are very promising. Three of our nurses have undertaken to "lead" such parent groups with very encouraging response. We do not refer here to talks to mothers or other groups, but a different, freer, more living and meaningful process in which the group itself is the teacher. The nurses and the parents who have taken part in these have attested to the real and lasting change that takes place in such a setting.

Of course the pitfalls on the nurse's path as she tries to spread the knowledge of the normal, and help to prevent and correct the deviations from the normal are obvious. But through the mental-hygiene clinic, the regular conferences with the psychiatric social worker or the psychologist as her work progresses, and through her own experience, the nurse becomes aware of her own limitations and those of her agency, and learns to work productively within them. Some there are indeed who make so much of the dangers that they are blind to the possibilities. But no-one can deny that mental health is public health, and what public-health measure has not met with reactionary resistance? To safeguard against these dangers is one of the functions of the mental-hygiene division.

SUMMARY

An account is given of the work of a mental-hygiene division in a public-health department. The organisation of the metropolitan health department is described. Its relationships with other agencies are shown. The composition of the mental-hygiene division is briefly sketched and the influence of its mental hygiene clinic is indicated. Examples are given of the ways in which the public-health nurse exercises her functions in mental-hygiene work (1) in the community, (2) in the schools, (3) in child-health centres, (4) in tuberculosis control, (5) in the mental-hygiene clinic, and (6) in group discussions.

BACTERIAL GENETICS

GENETICS have an increasing part in the study of bacteriological problems, and in order to outline the uses and techniques of the subject a colloquium was held in London on Dec. 14–17 by a group of interested bacteriologists. While the range of the discussion was intentionally wide, a medical bacteriologist may have thought that a disproportionate amount of time was spent in reviewing the genetics of bacteriophage and of *Escherichia coli K 12*; but this can be justified by the fact these organisms are the most susceptible to detailed analysis.

Opening the colloquium, B. A. D. STOCKER gave an admirable review of bacterial transformation and transduction by phage, while W. HAYES did the same for the genetics of *Esch. coli K 12*. (Unfortunately many of the other speakers did not maintain the same standard of lucidity. This was partly because some participants presented new material instead of discussing principles; such contributions tended to break the flow of the meeting, and the informal air desirable in colloquia was lost.) Discussing the papers by Stocker and Hayes, J. L. JINKS spoke of the exclusion factor which he believes to be an essential part of the mechanism of recombination in *Esch. coli K12*.

A discussion on population changes was opened by CHARLOTTE AUERBACH, who emphasised that workers were sometimes not careful enough in their use of words: for instance, "mutation" was used to mean both the act of producing a mutant and the mutant itself. She also pointed out the dangers in interpreting experiments in which selection of a mutant is involved. D. A. MITCHISON described some of the mechanisms which may bring about large-scale changes in cultures, referring mainly to the antibiotics. J. YUDKIN sought to explain some of these changes on clonal variation—a hypothesis that would require revision of some of our ideas of inheritance of bacterial characters.

The genetics of bacteriophage was next discussed. In this field the fact that the result of crosses can be analysed is offset by our lack of knowledge of how the phages are reproduced; at present no hypothesis of phage replication adequately fits all the known facts. However, ELINOR MCCLOY and NEVILLE SYMONDS described the main experimental facts in this field, while W. HAYES discussed the inheritance of prophage. Other viruses were rather neglected; but F. FULTON did give a satisfying account of the recombination between influenza strains, and he suggested that the virulence of these strains was best attributed to an inherited pattern rather than to any single character.

The final session was devoted to some of the applications of bacterial genetics, including its possible uses in the study of virulence. T. W. BURROWS described the importance of growth factors in *Pasteurella pestis* strains, while L. F. HEWITT outlined the rôle of phages in the toxogenicity of diphtheria. D. ROWLEY put forward a scheme (still in the experimental stage) for analysing the mouse virulence of *Esch. coli* strains.

The organisers are to be congratulated on their attempt to introduce the study of genetics to a wider range of workers.

CEREBRAL PALSY

AT the national congress of the Societa Italiana di Ginnastica Medica, held in Milan on Dec. 6–8, Dr. A. COLLI GRISONI (Milan) pointed out that there had been a distinct change in the approach to the infantile cerebral palsies. Formerly regarded as osteomuscular states, only partly amenable to static forms of treatment, they were rapidly becoming recognised as neurophysiological conditions in the developing child, calling for a dynamic approach. Defective development should be evaluated from both physical and mental angles, in order to give a prognosis of a child's educability. Her fundamental principles of treatment could be grouped under three heads—physiotherapy, occupational therapy, and speech therapy—and suitable personnel were about to be trained in Italy for this work. Trainees with a vocation must be selected and specially trained in precise techniques of management. She felt that babies are best treated at home, children between 3 and 5 years at special day centres attached to hospitals, and older children at schools for handicapped children. She emphasised the importance of instructing parents in day-to-day care of their children, and remarked that even children barred by mental deficiency from ordinary education can be helped to some extent. Spastic children, she said, must first acquire complete relaxation; then passive movements must be applied; later passive-active movements must be carried out; and, lastly, active movements.

There was much to be done in the field of the infantile cerebral palsies, and neurologically based research should be encouraged.

Dr. L. MASSIMO (Genoa) read, in translation, the commentary to an English film, previously shown in London This film, entitled *The Rôle of Mental Function in Physical Activity*, was prepared in the cerebral-palsy unit at Queen Mary's Hospital for Children, Carshalton, and the associated parents' advice clinic. The commentary pointed out that cerebral palsies may occur in mentally normal and in mentally deficient subjects, and that prognoses of ultimate compensation for these non-progressive motor disorders rest on evaluation of the patient's mental function.

The film first illustrated the rôle of mental function in ordinary everyday activities of intelligent adults who, having been born without arms, were effectively compensating for their missing limbs. The first, a mother of seven children, was shown doing housework and caring for her youngest child; the second, a young man, was shown at work. The film then illustrated the development of mental function in normal babies, and showed the defective development of children with abnormalities of brain function. Four defective babies were shown during clinical testing for primary abnormalities of mental and motor function. The tests revealed that two of the babies had no motor disorder, and two had both mental and motor limitations. These four babies were shown at later stages of development, and the correctness of the diagnoses thus demonstrated.

The commentary emphasised the need for planning compensatory activity for children with primary motor defects and demonstrated the results of appropriate planning in palsied children shown at play and in school. Those of normal intelligence showed achievements, within their motor limits, appropriate to their ages, and those with mental deficiencies failed in this respect. Finally, two brothers were shown, one normal and one with cerebral palsy. The boy with cerebral palsy showed activity which closely resembled that of his brother. He had been competently helped from an early age to use his defective motor function skilfully for expressing his lively intelligence.

The trend of the papers read and the films shown at this congress was towards a new approach to the infantile cerebral palsies—an approach based on neurophysiological study of infant development, recognition of mental abnormalities, and practical application of dynamic principles in techniques of diagnosis and of management of children with brain deficiencies.

Mrs. Eirene Collis, C.P.T., of the cerebral-palsy unit at Queen Mary's Hospital for Children, Carshalton, was awarded by the Italian Republic the *stella della solidarietà italiana*, for services to the children of Italy.

Public Health

Coloured Food

THE Food Standards Committee has adopted a recommendation by its preservatives subcommittee [1] that the Public Health (Preservatives, &c., in Food) Regulations, 1925–53, should be amended so as to permit the inclusion in foods of specified colours only.

The subcommittee, whose chairman is Sir Charles Dodds, F.R.C.P., F.R.S., remarks that the practice of colouring food is by no means new.

Pliny the elder, for instance, referred to the colouring of wine. But it is only in the past hundred years or so that this practice has been open to possible objection. About 1850 the "coal-tar" dyes were discovered, and these have now largely replaced the natural colours previously used.

In 1924 a departmental committee, appointed by the Minister of Health, recommended that the use of only specified colouring matters, regarded as non-injurious to health, should be allowed. But the Government of the day decided on a different approach; and under the 1925 regulations the inclusion in food of certain colours then known to be harmful was prohibited. These were: antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc; gamboge (a vegetable colouring-matter); and five "coal-tar" colours (picric acid, victoria yellow, aurine, manchester yellow, and aurantia).

The present position is that the Food and Drugs (Milk, Dairies and Artificial Cream) Act, 1950, prohibits the addition of colouring matter to milk; but otherwise any colours not specifically prohibited by the Public Health (Preservatives, &c., in Food) Regulations, 1925–53, may be used in foods, provided that such use does not contravene the provisions of sections 1 and 3 of the Food and Drugs Act, 1938.

The subcommittee observes that evidence has been accumulating which indicates that "coal-tar" colours other than the five already prohibited may be a hazard to health; in laboratory animals some have proved carcinogenic.

Without the addition of colour, says the subcommittee, many foods would have a drab unattractive appearance. If, therefore, there is enough evidence that the colours used have no deleterious effect on health, it sees no objection to their being used to replace natural colour lost in processing, to standardise appearance, or simply to render a food more attractive. But the report suggests that the addition of colour to raw meat, game, poultry, fish, fruit, and vegetables should be prohibited (to the best of its knowledge such additions are not being made in this country).

The report ends with a list of colours which, the subcommittee suggests, should be approved for inclusion in food.

Representations on the subcommittee's recommendations may be submitted, up till March 31, to the Joint Secretary, Preservatives Subcommittee, Ministry of Food, Great Westminster House, Horseferry Road, London, S.W.1.

1. Food Standards Committee: Report on Colouring Matters. H.M. Stationery Office. Pp. 27. 1s.

Fish and Chip Shops

In his report for 1953, Dr. T. R. Roberton, medical officer of health for Bootle, describes how his department has been improving the standard of hygiene in fish and chip shops in the borough. Generally the shops were well maintained, but one possible source of danger (and it is certainly not one that is confined to Bootle) was the improvised shed at the rear of some premises, which was used for storing, cleaning, and peeling the potatoes and which was often an unsuitable place for the job. The report also refers to the wrapping of fish and chips in "an inadequate sheet of grease-proof paper" and then in newspaper "the source of which was unknown." Proprietors were recommended to wrap the food completely in a suitable paper bag and to use "an external wrapping from an approved source."

Geography of General Practices

Middlesbrough's health department lately made a small survey to find out the extent to which the local family doctors' practices overlapped geographically. In his report for 1953, Dr. E. C. Downer, medical officer of health for Middlesbrough tells how six streets were selected from different parts of the town; only houses which some member of the department happened to be visiting officially were included in the inquiry. In one street, 18 families were attended by 17 different doctors; in another, 25 families were attended by 19 doctors. Each street surveyed had 10 or more doctors covering from 12 to 26 families. "From this it will be seen," Dr. Downer comments, "that in times of widespread illness or epidemics the general practitioners of the town have to motor all over the town to attend their patients. . . . An enormous amount of time must be spent by doctors at the wheel rather than at the bedside, and . . . it is impossible to attach the district health visitor as closely to the doctors as one would wish." He suggests that, in the interests of economy, "five or six doctors working in some form of group practice should be responsible for a large housing estate or

group of housing estates," and that the choice of doctors should be limited to those within this group practice.

Smallpox in France

The French ministry of health states that the port of Vannes in the Morbihan department in Brittany has been declared infected with smallpox. Up to Jan. 4, 13 cases, including 2 deaths, had occurred. Sanitary measures have been applied from that date to departing ships.

Notification of Puerperal Pyrexia

The forms used in notifying puerperal pyrexia are to be altered so that the cause of the disease, if known, can be stated.[1] Regulations to this effect come into operation on March 1, and will apply to all notifications in England and Wales, including London.

London in 1954

Almost before the New Year festivities are over, Dr. J. A. Scott and his colleagues in the public-health department of the London County Council have published preliminary vital statistics for the old year. The London birth-rate for 1954 was 15·2 per 1000 population—the same as in 1953—so the decline which has been in progress since 1947 has halted. The provisional death-rate was 10·9 per 1000 population—the lowest ever recorded. The decrease in the number of deaths was largely due to a reduction in mortality from respiratory diseases. The infant-mortality rate for 1954 was 22 per 1000 live births, as against 24 in 1953. Notifications of new cases of tuberculosis in London fell from 5078 in 1953 to 4730 in 1954, and there has been a further decline in the death-rate from 0·23 per 1000 population to 0·18—a new low record.

Third Quarter in Eire

In Eire during the third quarter of 1954,[2] the birth-rate was 21·6 per 1000 population (0·3 greater than in the same quarter of 1953), and the death-rate 10·5, compared with 9·7 the previous year. The infant-mortality rate was 30 per 1000 births registered (38 in the corresponding quarter of 1953), and the maternal-mortality rate was 1·1 per 1000 (a decrease of 0·4). The death-rate from malignant neoplasms was 1·5 per 1000 population, as against 1·4 in the corresponding quarter of 1953. The death-rate for all forms of tuberculosis was 0·3 per 1000 (0·2 for pulmonary tuberculosis); these rates were the same as in the corresponding quarter of 1953.

1. The Puerperal Pyrexia (Amendment) Regulations, 1954. S.I. 1954, no. 1691. H.M. Stationery Office. 2d.
2. Quarterly return of the marriages, births, and deaths registered during the September quarter, 1954. Government Publications Sale Office, G.P.O. Arcade, Dublin. Pp. 12. 6d.

Infectious Diseases in England and Wales

Disease	Week ended December			
	4	11	18	25
Diphtheria	13	15	18	15
Dysentery	463	357	345	340
Encephalitis:				
Infective	..	1	1	2
Postinfectious	1	..	1	..
Food-poisoning	183	134	164	138
Measles, excluding rubella	6017	6298	6606	5840
Meningococcal infection	35	21	24	28
Ophthalmia neonatorum	33	30	47	27
Paratyphoid fever	2	7	9	5
Pneumonia, primary or influenzal	728	768	746	758
Poliomyelitis:				
Paralytic	29	30	26	8
Non-paralytic	13	13	10	1
Puerperal pyrexia	233	214	218	179
Scarlet fever	893	709	800	673
Smallpox	..	..	..	..
Tuberculosis:				
Respiratory	677	723	667	493
Meninges and C.N.S.	15	5	13	7
Other	83	80	71	62
Typhoid fever	..	2	1	2
Whooping-cough	2156	2047	1838	1256

Before Our Time

MEDICAL MISSION 1855

M. E. S. LAWS
O.B.E., M.C., F.R.Hist.S.

FROM the medical point of view, the Crimean War is best remembered for the virtual collapse of the British military administrative system, the terrible casualties of Lord Raglan's force from cholera, exposure, and semi-starvation, and the failure to provide adequate hospital accommodation, staff, or equipment. Under pressure of public opinion, the Government made strenuous efforts to remedy these shortcomings, and by early in 1855 there was promise of general improvement. But it is not generally known that at this time, when our own medical resources were under great strain to provide more doctors for the army in the Crimea, we also made a considerable and successful effort to help our Turkish ally.

Early in 1855 General Cannon, who was head of a British military mission with Omar Pasha's army on the Danube, reported that the Turkish troops had practically no medical organisation and were losing many men because of this. He begged that a British medical staff should be dispatched as soon as possible, with essential equipment, to organise hospital facilities. At that time the Government was still recruiting doctors for Lord Raglan's army, and was also committed to finding doctors for his Turkish division of 20,000 men and an irregular cavalry corps of 4000 men which were being taken into British pay and service. The authorities in London might well have declined to respond to General Cannon's plea and it is to their credit that they accepted this further task.

It was decided that the medical mission to Omar Pasha's army should consist of an inspector-general of hospitals, a deputy inspector-general, four surgeons (1st class), fifteen surgeons (2nd class), four dispensers, twelve dressers, a storekeeper, and a clerk. All except two surgeons and one dresser were British, but all were given Turkish military rank, varying from major-general to lieutenant. As few of the doctors had had any previous military experience, it was perhaps inevitable that insufficient stress was laid on the need for physical fitness, and some of those who volunteered proved unable to stand the hardships involved. Two surgeons died and the inspector-general (Dr. J. Fuller), two other surgeons, and a dispenser, were invalided soon after reaching the theatre of war. Dr. A. Farquhar, the deputy inspector-general, then took charge of the mission.

When the mission reached the Black Sea, Omar Pasha had transferred the bulk of his army to the Trebizond district, so as to relieve the Russian pressure on Kars. The mission therefore moved to the new area: a small detachment was left to organise a field dressing-station with the fighting troops, while the main body took over the Turkish hospitals at Trebizond and Sinope. Conditions in these establishments were chaotic and the records showed a death-rate of between 80–90% of admissions. The British mission took charge in November, 1855, and the following figures cover the seven months they were in control:

Unit	*Admitted*	*Died*	*Discharged*	*Remains*
Field dressing-station	414	12	402*	..
Trebizond hospitals	2196	378	1578	240
Sinope hospitals	120	4	116	..
Totals	2730	394	2096	240

*Evacuated to hospitals

When the mission ended their duties in May, 1856, and returned to England, the mortality-rate had thus fallen from over 80% to under 15%. The statistics of this outstanding achievement, which have been taken from Dr. Farquhar's official report, have never been published, but in view of the criticism at that time of the Army Medical Department in particular and of the medical profession in general, it would seem only just to place them on record, even though they relate to a century ago.

In England Now

A Running Commentary by Peripatetic Correspondents

I'm glad you like the Guidance Clinic,
Sophisticated little cynic,
I'm pleased when you are in a paddy,
It shows you sometimes hate your Daddy.
And when you smash up all the lights
It hints at guilty thoughts at nights.
You kick my shins and spit at me
Oh *don't* we have a jolly spree ?
But sometimes, sweet delinquent, dear,
You go too far, and then I fear
Your Father-figure's gentle smile
Is like that of the crocodile,
Whose overt attitude to fishes
Does not reflect his inner wishes.
When cold and tired, with empty belly,
I'd like to beat you, dear, to jelly.

Moral.—Do not put your question to experimental test.

* * *

"Many Afghans," a friend from Kabul writes, "are worried, and sometimes caused great pain, by an ailment peculiar to the country, which only their local doctors can diagnose or cure—fallen navel." If the navel has slipped out of place (that is, is not in correct and equal measurement from the nipples) a specialist is called in to manipulate it back into place. Science and engineering having abolished distance, I feel that cases may, at any moment now, appear in this country. Perhaps we have already overlooked sporadic outbreaks. We should be prepared. I myself am ready with the apt, euphonious, descriptive term "omphalolisthesis." I am also providing myself with a slightly stretching measuring-tape—made to my own design by Messrs. Uppe Bros. Plastic surgery should be on its toes to replace clumsy and painful manipulation by accurate and effective omphalentoporrhaphy or omphalopexy, to be performed under spinal anæsthesia and, of course, in the shade of the indispensible *umbrella penicillinæ*. That 'll show 'em. Better fifty years of Europe than a Cycle of Cathay.

* * *

The soft airs of the Fortunate Islands are very restful after the rigours of the English winter. From the air the islands spread like mould-eaten bacterial colonies with twisting lagoons, white inlets, and black, ship-tearing rocks.

Captain Anson [1] set off from these islands in 1740 with a small fleet of ships only partly crewed with trained seamen. The military complement consisted of five hundred Chelsea pensioners, and two hundred and fifty untrained marines who had not yet been allowed to fire their guns. Less than a tenth of his men survived his trip round the world, and he returned with only one of his fleet of six ships, but with an immense fortune from the treasure ships of Spain. He was full of ideas about the ætiology of the diseases which decimated his crew, particularly the scurvy. Fluxes and tenesmus, he correctly observed, were associated with the filth below decks, and with touching at certain ports. But scurvy was the worst peril, men dying in their tens each day as they rounded Cape Horn and beat their way up to Alexander Selkirk's deserted but beautiful island.

The scorbutics bled from their gums and died of obatinate constipation. Their old battle wounds broke down; and in one pensioner a bone healed for fifty years fractured again spontaneously, the callus melting away. The disease carried with it a fatal melancholy—which is not surprising since it was, one feels, more dangerous than shipwreck. Increased danger, or "fatal rumours," caused an increased mortality among the scorbutic. The disease was as severe during the Pacific crossing, when fresh fish was eaten daily, as it was on the Atlantic voyage on "hard tack." The patients recovered rapidly after being put ashore, though many died during the transfer from the ships. But patients who had received a boatload of fresh vegetables a week before the weather allowed them to land did not sustain this mortality. This puzzled Anson, who was as full of views on scurvy as were all his contemporary literary seafarers. He realised that limes came into it somewhere, but obstinately stuck to his view that landing on shore was the only true cure. Man, he believed, was ill adapted to the foreign element of the waters, requiring the insensible vapours of terra firma for full health.

1. Pack, S. W. C. Anson's Voyage Round the World. Harmondsworth. 1948.

* * *

My absence from this column has probably passed unnoticed by all but myself. Life got me down. What has caused my recovery ? A gadget. No, not a lift or a television set but a super-cooker. Any other doctor's wife who has spent years trying to keep meals hot and attractive will have experienced my trouble. Let her now press for the cure. My advice to any married doctor is to make sure the wife is happy in the kitchen. If the domestic chores run smoothly the little woman will find that she has sufficient vital energy left to cope with the telephone, the patients and their relatives, the things they leave in the hall, and the effect they have on her husband. She may even find that she has the heart to take up her former hobbies. Look at me—peripatetic again.

* * *

The examination for the certificate in public health at a school approximately 60 yards from the Senate House of London University began on Dec. 13. On Dec. 10 the following anonymous notice appeared on its notice board :

According to a usually well-informed member of the staff the following questions are going to be asked at the C.P.H. examination : Do not try to answer more than 2 questions at a time !

Statistics : 1. The Equivalent Average Standardised Mortality Comparative Figure for the C.P.H. students is 1795. That for Piano-Tuners is 82. What conclusions do you draw from that ? (Be frank.)

2. What sort of figure is the Registrar General ? Is it likely that he will ever be promoted to Field Marshal ?

Epidemiology : In a family with 18 children 1 child is infected with whooping-cough. Is he (she) likely to recover ?

History : Write a short note about something that Edwin Chadwick did not do.

Public Health : 1. You are the Medical Officer of Health of a County Borough. Why ?

2. Make a short comparison between the Rag Flock and Other Filling Materials Act, 1951, and the Shellfish (Provision of Meals) Regulation, 1934

3. "Never before in history have so many learnt so little about so much" (C.P.H. student). Discuss this statement.

Genetics : If a man tells you that his father had phalangeal synosotosis, his second cousin was a hæmophiliac, his sister-in-law was colour-blind, and one of his 7 sons had retinitis pigmentosa, whereas he himself was a schizophrenic, what would be your advice ?

* * *

Mother : "I think I shall buy these chocolates after all. I feel in a self-indulgent mood."

Daughter, aged 9 : "Surely, mummy, you mean self-embulgement ! "

* * *

O & M

That O & M's home stamping-ground
be carefully protected
each Civil Servant's moved around
ere too much is expected.

Yet you and I can't leave our pitch
to follow their example,
so surgeons will be paid per stitch,
physicians priced per sample.

New methods will apply, or should,
(Review teams are quite passé)
and endless belts of plain steam pudd,
will oust the marrons glacés.

Sweet secretaries were bad for "firms";
machines, they say, are better,
for pool typists' medical terms
may brighten up the letter.

So, fresh the eye and blank the mind !
Let time-checks be abundant !
If Deaths and Discharges drop behind,
some staff must be redundant.

Letters to the Editor

THE MALNOURISHED COMMUNITY

SIR,—I write to support Professor Platt's excellent and realistic views (Nov. 6) on infant feeding in technically under-developed tropical countries.

As he rightly says, a most important practical approach to malnutrition in this type of community must be through the mother and child at the maternity and child-health centre. Unfortunately at present a large proportion of these centres are being rendered valueless by a lack of appreciation of the necessity for methods quite different from those employed in Europe and North America. To understand this it is necessary to appreciate the fact that all pædiatricians and others engaged in this type of work—of whatever nationality—have either been trained in the West or have used textbooks written entirely on Western-style infant feeding. When coming in contact with the nutritional problems and feeding practices in the tropics, the pædiatrician with this type of training is almost always unaware of such aspects of the subject as the disadvantages and overwhelming advantages of prolonged breast-feeding; the scarcity or absence (or, in some regions, the dislike) of animal milk; and the effect of beneficial and deleterious food prejudices. Without exception, he then passes through a "phase of bewilderment" until he realises that the cherished methods learned at medical school are inapplicable under the very different socio-economic and cultural conditions found in most of the technically under-developed areas of the world. Following this, two courses may be followed—either a cautious attempt to modify his teaching in the light of local reality, or, disastrously, the adoption of an "ivory-tower" attitude, whereby Western-style instruction on infant feeding continues to be dispensed, without either meaning or effect.

The correct approach to the teaching of methods of infant feeding in most under-developed tropical regions (and, it must be remembered, this embraces the majority of the world's child population) may be envisaged in the following logical stages:

(i) Investigation of local methods in use in the particular area, with especial reference to customs, taboos, and food prejudices, not only in infant feeding, but also during pregnancy and lactation.

(ii) *Unprejudiced* analysis of the value, or otherwise, of these methods in their particular cultural and geographical setting, with especial reference to the availability of animal milk.

(iii) Teaching of methods of infant feeding based on desirable local customs, modified or improved, if necessary, by scientific knowledge, together with the elimination of harmful practices. (As an extreme example, it may be noted that in parts of Africa no cattle can be kept at present because of the tsetse fly. In these circumstances, where absolutely no animal milk is available, prolonged breast-feeding is a biological necessity, but can, in all probability be improved, as far as the yield is concerned, by ensuring that the mother is as well fed as possible on a diet of locally available foods. At the same time an undesirable aspect of this practice, which should be discouraged, is the custom of breast-feeding an infant when the mother has become pregnant again.)

Finally, I would like to endorse Professor Platt's suggestions that the two main initial items in a programme of infant and maternal care in a malnourished tropical community are the selection of suitable foods (especially vegetable protein foods) for mixed feeding and the design of a diet to enable the mother to lactate adequately for two years or even longer. These are not subjects of interest only to a few anthropologically minded pædiatricians, but the top problems of infant nutrition in the world today.

Calcutta. D. B. JELLIFFE.

MYOCARDIAL TOXOPLASMOSIS

SIR,—Dr. Paulley and his colleagues reported [1] a series of cases of toxoplasma myocarditis in which the diagnosis was based on serological findings alone. In their cases the dye-test of Sabin and Feldman and the complement-fixation test were both positive; both were done as a routine because of the well-known non-specificity of the dye test.

The interest aroused by this report was shown by the number of sera which were subsequently sent to this laboratory for examination for toxoplasma antibodies from patients with obscure myocarditis. In one of these the dye test was positive at 1 : 32 and the complement-fixation test positive at 1 : 8—findings thought to be diagnostic of toxoplasmosis. The patient died a short time later, and through the courtesy of Dr. Alun Williams I was able to examine a part of the myocardium. The well-washed and finely ground myocardium was injected intraperitoneally into mice, and on the 10th day after primary inoculation abundant toxoplasmas were seen in the mouse peritoneal exudate and passaged from it.

This finding emphasises the association between the presence of toxoplasmas in the tissues and of toxoplasma antibodies in the serum, and lends weight to the belief, based on the serological findings, that the cases of myocarditis described by Paulley et al. were in fact caused by toxoplasmas.

The Hospital for Sick Children, London, W.C.1. I. A. B. CATHIE.

VENEREOLOGY AND DERMATOLOGY

SIR,—When the National Health Service became effective in 1948, venereology was established as an entirely separate and independent specialty, a decision which was based upon more than thirty years' experience of the venereal-diseases scheme and received the approval of almost everyone. Since that time there has been a fall in the incidence of first infections with venereal disease, an expected development which certainly owes more to peace and full employment, and to the efficiency of the service, than to new remedies. It is clear that some of our administrators are regarding this fall in incidence as an indication that the problem is solved and as an opportunity for saving money. Recently a dermatologist was appointed to take over clinics in East Anglia from a venereologist, the appointment being advertised under the heading of dermatology although most of the sessions were in venereology.

Now comes this advertisement relating to East Kent, and Dr. Erskine (Jan. 8) puts in some special pleading for the suitability of a combined appointment in this area on the rather confusing grounds that (1) there is not enough work to hold the interest of a venereologist in East Kent; (2) it is a bad thing to have too much specialisation; and (3) a senior registrar in venereology can become competent as a consultant in dermatology by spending part of his time in the dermatological department when working in venereology.

Of course it is a good thing for a venereologist to know something about dermatology, just as it is a good thing for him to know even more about general medicine, cardiology, neurology, and psychiatry. But part-time work for three years will not make him an expert in any of these subjects, and Dr. Erskine's registrar is to be congratulated on his wisdom in not applying for the East Kent appointment.

Surely, Sir, since the principle that the two subjects should be separated has been accepted the appointments in dermatology and venereology in East Kent should be separately advertised and filled by different consultants. If, as Dr. Erskine says, there is not enough work for a venereologist in East Kent, an area which has large

1. Paulley, J. W., Jones, R., Green, W. P. D., Kane, E. P. *Lancet*, 1954, ii, 624.

centres of population and important seaports, the explanation may be that clinics are inadequate or badly sited, or that there is not a proper liaison with other departments of the hospitals concerned. The late manifestations of venereal disease are commonly to be found among general medical cases and in other special departments. If the venereologist has the right degree of interest in his work his colleagues will be anxious to seek his advice and help. If, on the other hand, he belongs to some other special subject and has only perfunctory interest in venereology no-one will want his advice. The result will be a poor standard and a break-up of the organisation which has been built up gradually with labour and tears and has produced such excellent results.

St. Bartholomew's Hospital, London, E.C.1. CLAUDE NICOL.

FAILURE OF GLYCYRRHETINIC ACID TO CONTROL ADRENAL INSUFFICIENCY

SIR,—Since Molhuysen et al.[1] in 1950 first reported the deoxycortone-like activity of liquorice extract, a number of papers have appeared describing the effects of liquorice and liquorice extracts in patients with adrenal insufficiency. Several authors[2–7] have described patients with Addison's disease who have been maintained satisfactorily on liquorice extract or glycyrrhetinic acid.

In a previous communication[4] we described a patient, a woman of 45 with Addison's disease, whose response to the administration of 50 mg. of glycyrrhetinic acid four times daily was in some respects similar to her previous response to deoxycortone injections and cortisone by mouth. Eight months after implantation of deoxycortone and testosterone pellets, when these were judged to be exhausted, a course of treatment was begun with glycyrrhetinic acid, 250 mg. daily. It was hoped that it would be possible to maintain her satisfactorily on liquorice derivatives alone, and she received no other specific treatment for nine months. She remained apparently well during this time, but was then admitted to hospital in a severe addisonian crisis. We record our alarming experience so that the utmost care may be taken by others using these preparations in the management of adrenal insufficiency.

In July, 1952, this patient had been admitted to hospital, and in September, 1952, she was discharged with implants of 300 mg. of deoxycortone acetate and 100 mg. of testosterone. She remained tolerably well until May, 1953, by which time the pellets were considered to be exhausted. For two weeks she was given capsules of lactose as a control, and for the next ten days glycyrrhetinic acid (250 mg. daily) was substituted. As further supplies were temporarily not available, potassium glycyrrhizinate (500 mg. daily) was given instead for the following four weeks; and this in turn was followed by lactose "dummy" capsules. Her condition deteriorated and after two weeks she again began to take glycyrrhetinic acid, 100 mg. three times a day. She continued with this for the following five months, when the dose was increased to 400 mg. daily. Two months later she developed a cold, and after three days became drowsy and finally comatose, in which state she was admitted to hospital.

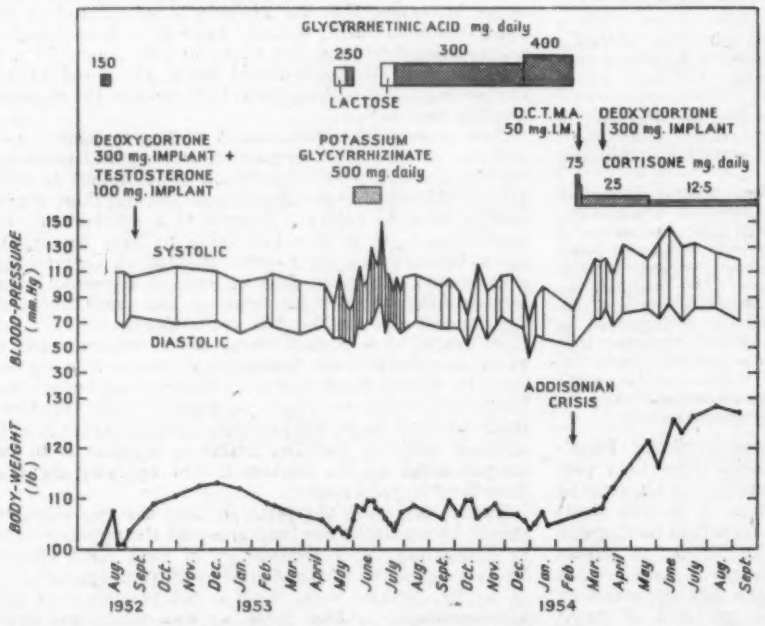
She subsequently claimed that she had taken the capsules of glycyrrhetinic acid up to the day on which she went into coma; and her husband confirmed this independently.

When admitted to hospital she was deeply stuporose, with cold, cyanosed extremities. Axillary temperature was 98·8°C, and four hours later 100·3°C. Her pulse-rate was 110 per min. and blood-pressure 90/60 mm. Hg. Serum-sodium concentration was 111, serum-potassium 3·8, and serum-chloride 92·5 m.eq. per litre; the blood-sugar level was 73 mg. per 100 ml.

She was given intravenous glucose and saline with cortisone, and intramuscular injections of deoxycortone and cortisone acetate. Within seven hours her blood-pressure had risen to 130/90 mm. Hg, she was sufficiently conscious to call for and use a bedpan, and was complaining of headache. She passed 1950 ml. of urine in the first fifteen hours after admission to hospital.

Within three days she had almost recovered and thereafter her progress was most satisfactory. She has since been maintained on an implant of three 100 mg. pellets of deoxycortone and 6·25 mg. of cortisone twice daily by mouth. The changes in her weight and blood-pressure are shown in the accompanying figure. In her own words she "has taken a new lease of life," and has not felt so well for many years. She is in no doubt that her general condition on deoxycortone and cortisone is incomparably better than while she was taking glycyrrhetinic acid, though at that time we recorded her statement that she was "feeling fine."

We are satisfied that this patient developed acute adrenal insufficiency following coryza, at a time when, as far as can be ascertained, she was taking a dose of glycyrrhetinic acid on which she had been maintained in health for several months. It was remarkable that, although she had had no diarrhœa and apparently vomited only twice, her serum-sodium concentration had fallen as low as 111 m.eq. per litre, while at the same time



Changes in weight and blood-pressure in response to various forms of treatment (D.C.T.M.A. = microcrystalline suspension of deoxycortone trimethylacetate).

1. Molhuysen, J. A., Gerbrandy, J., Vries, L. A., Jong, J. C., Lenstra, J. B., Turner, K. P., Borst, J. G. G. *Lancet*, 1950, ii, 381.
2. Groen, J., Pelser, H. E., Frenkel, M., Kamminga, C. E., Willebrands, A. F. *J. clin. Invest.* 1952, **31**, 87.
3. Groen, J., Pelser, H. E., Willebrands, A. F., Kamminga, C. E. *New Engl. J. Med.* 1950, **244**, 471.
4. Card, W. I., Mitchell, W., Strong, J. A., Taylor, N. R. W., Tompsett, S. L., Wilson, J. M. G. *Lancet*, 1953, i, 663.
5. Parish, A. E., Alpert, L. K. *Amer. J. Med.* 1953, **14**, 522.
6. Pelser, H. E., Willebrands, A. F., Frenkel, M., Van der Heide, R. M., Groen, J. *Metabolism*, 1953 **2**, 322.
7. Calvert, R. J. *Lancet*, 1954, i, 805.

her serum-potassium concentration was also depressed to 3·8 m.eq. per litre, and later fell as low as 2·4 m.eq. per litre. We attribute the initial low serum-potassium concentration in this patient with Addison's disease to the glycyrrhetinic acid, but this deoxycortone-like effect conflicts with its failure to prevent the serum-sodium from falling to the unusually low figure of 111 m.eq. per litre. A similar paradox was noted by Parish and Alpert [5] in one patient treated with syrup of liquorice who showed increased potassium excretion with alternate positive and negative sodium balance.

In view of the patient's subsequent progress, it is clear that when she was having glycyrrhetinic acid her condition was much less satisfactory than when, later, she was given deoxycortone and cortisone. It is unwise to generalise on experience with one patient, but we feel that glycyrrhetinic acid alone is not a suitable substitute for conventional treatment in more severe cases of Addison's disease. We do not suggest that glycyrrhetinic acid or crude liquorice preparations are not pharmacologically active, but rather that for some patients they may be inadequate as the sole form of treatment, much as deoxycortone alone is inadequate for the proper maintenance of patients with adrenal insufficiency. Neither deoxycortone nor glycyrrhetinic acid has any appreciable effect on carbohydrate metabolism, and cortisone or hydrocortisone is required to correct this deficiency. Molhuysen et al.[1] and Borst et al.[8] found that some patients with Addison's disease failed to respond to treatment with liquorice derivatives, and it is possible that with the development of the disease our patient had become unresponsive to the drug.

Borst et al.[8] have described a synergism between glycyrrhetinic acid and cortisone, though Hart and Leonard [9] were unable to confirm this. We wonder therefore whether those patients with adrenal insufficiency who have apparently been satisfactorily maintained for long periods on glycyrrhetinic acid may not in fact have been secreting small amounts of adrenal cortical hormone, which without the addition of glycyrrhetinic acid would have been insufficient to prevent symptoms of adrenal insufficiency. There is, of course, the possibility that our patient had neglected to take the drug; or, alternatively, that if the dose had been considerably larger she might not have developed an addisonian crisis.

We are grateful to Dr. Wm. Mitchell, of Messrs. Stafford Allen & Co., Ltd., for supplies of the liquorice derivatives used.

Western General Hospital, Edinburgh.

J. A. STRONG
J. M. G. WILSON.

FLUOROACETATE POISONING

SIR,—As you say in your annotation of Dec. 18 on the control of rats and mice, sodium monofluoroacetate is dangerous to mammals. Yet, if properly handled by trained personnel, it can perform its function and do no harm to man or domestic animals. This, anyhow, is the experience of one group of commercial specialists over two years, during which there has been no evidence of toxicity to the operators or to animals other than rats and mice.

Latterly, we have been working on a derivative of sodium fluoroacetate, fluoroacetamide, which tested pharmacologically on rats and mice proves to have an L.D.$_{50}$ about twice that of sodium fluoroacetate (about 4 mg. per kg. for the amide, 1–2 mg. per kg. for the sodium salt) and, moreover, to produce only mild symptoms of toxicity and none of the epileptiform convulsions characteristic of sodium-fluoroacetate poisoning. For this reason, fluoroacetamide has now been suggested as a field rodenticide in place of sodium fluoroacetate, and details will shortly be published. Although its toxicity is less than that of the sodium salt, it is, it appears, quite sufficient to make it an effective rodenticide.

It is now well established by the work of Sir Rudolph Peters [1] that the toxicity of sodium fluoroacetate is due to formation in vivo of fluorocitric acid, and it is our suggestion that fluoroacetamide is only slowly converted into this toxin as compared with sodium fluoroacetate, thus giving only small blood-concentrations of fluorocitrate (sufficient to kill rodents but not sufficient to cause violent death) and a larger margin of safety in use. It is, of course, to be hoped that antidotes to fluoroacetate poisoning will continue to be sought; fluoroacetamide may be more likely to yield to treatment than sodium fluoroacetate in view of the probably lower blood concentrations of fluorocitrate when amide is used.

It is well known that the higher mammals are less susceptible to fluoroacetate poisoning than are rodents; Professor Adrian has taken a dose of sodium fluoroacetate sufficient to produce a urine toxic to guineapigs. For monkeys the L.D.$_{50}$ is about 15 mg. per kg.

Recently Saunders and Hughes [2] have shown that enzyme degradation of a C–F bond is possible; this, too, leads us to a more optimistic view about the possibility of antidotes to fluoroacetamide and fluoroacetate poisoning.

Romford, Essex.

M. A. PHILLIPS
Consulting Chemist.

HEAT TO THE HEART

SIR,—Some eighteen months ago I discovered that heat applied to the cardiac area very quickly relieved an attack of angina, and if applied sufficiently soon it would completely abort it. The means used were either an electric pad (the smaller the better) such as are sold for use in bed, or a face cloth or handkerchief wrung out in very hot water. The latter method is quicker but requires frequent renewals, and the handkerchief must be 110°F on application to be effective (just a little hotter than can comfortably be tolerated on one's own bare arm—not by a nurse's hand). The handkerchief may be used while the electric pad is heating up. The relief obtained is augmented by sips of hot water or hot tea. The pain is relieved much more quickly, though perhaps not more certainly, than by glyceryl trinitrate, and the method is more reassuring to the patient and may be preferable; in some circumstances it may be the only one available (even if the patient is out in a car a handkerchief can be dipped in the radiator or hot water obtained from a nearby house).

There is also no doubt that cold can precipitate an attack. That there may be a fundamental principle involved is now suggested by the work of Andjus at Belgrade, confirmed by Smith et al. and quoted in your survey on experimental deep hypothermia.[3] Andjus found that in extreme hypothermia cardiac arrest in animals occurred at 6°C and that by warming the whole body, plus artificial respiration, the animals could not be revived; and they all died. He then discovered, however, that if heat were first applied *locally* to the cardiac area (for example, by putting a "heated metal object" on the skin) and if this was combined with artificial respiration, the heart began to beat again and the animals recovered. Thus, the risk of anoxia of tissues (including the brain) during re-warming could be avoided. That is to say, keep the general metabolism of the animal (patient) as low as possible, supply oxygen and stimulate *only* metabolism of the heart, and spontaneous revival becomes possible.

Angina may be regarded as a threatened cardiac arrest, and cardiac arrest may be induced by hypothermic and hypotensive drugs. In any of these threatened emergencies it would therefore seem logical to apply heat *locally* to the cardiac area as a first step, accompanied by full use of oxygen and perhaps cooling of the head by ice-cold water in order to reduce cerebral metabolism, and so perhaps avoid the cerebral sequelæ that may follow recovery. People are more right than they wot of when they say there was a struggle between his heart and his head. There is always intense competition in the last resort between the two for glucose and oxygen, and if the heart is in extremis it is surely desirable to lessen this competition, and give the cardiac muscle a favourable balance for a few minutes.

8. Borst, J. G. G., ten Holt, S. P., Molhuysen, J. A., Vries, L. A. *Ibid.* 1953, i, 657.
9. Hart, F. D., Leonard, J. C. *Ibid.* 1954, i, 804.

1. *Endeavour*, July, 1954, p. 147.
2. Saunders, B. C., Hughes, G. M. K. *Chem. & Ind. (Rev.)*, Sept. 9, 1954, p. 1265.
3. *Lancet*, 1954, ii, 489.

Whether the method would be of use in cardiac arrest associated with drowning and electric shock is an interesting speculation, and it is being tried in this country. Trained first-aid surf teams have noted that the colder the water the more difficult it is to revive the drowned person by any of the usual methods. Here the layman on the beach and the scientist in his laboratory seemed to have arrived at similar conclusions.

Wellington, New Zealand. H. P. PICKERILL.

MERIT AWARDS

SIR,—Dr. Fletcher urges that moneys voted by Parliament for the National Health Service should be used to subsidise research other than that covered by the statute of 1946 as amended. I am not belittling research when I say that I believe the proper course would be for Parliament to be asked to increase the present grants for research if it be deemed desirable to increase the emoluments of research-workers. I consider that the diversion of public funds is the issue.

I think Dr. Fletcher is wrong in supposing that the merit awards were instituted as a compensation for lost private practice.

Sheffield, 11. ARTHUR JORDAN.

TUBERCULOSIS IN IMMIGRANTS

SIR,—As far as the Island of Lewis is concerned the paper by Dr. Hess and Dr. Macdonald [1] was an excellent appraisal of the position as it was 100 years ago, and as it could be in a very few years, but not as it has been from the beginning of this century till now. My experience confirms their views and that of others that the Celt is no more prone than other races to tuberculosis, but rather the high incidence and mortality spring from social factors almost entirely—at least in Lewis.

The Registrar-General informs me that mortality figures for Lewis begin in 1871. Comparative rates for that year are Lewis 92, Glasgow 668, Scotland 398, Orkney 150, Zetland 171. By 1914 Lewis was up to 310, and it ran at a higher rate than Glasgow from 1912 till 1936. Housing in Lewis began to improve in 1930 and the rate fell till 1942, when it was down to 50 but it rose yearly to 162 in 1948. It is still higher than Glasgow, the 1953 rates being Lewis 76 and Glasgow 43.

My view that the position from 1900 to 1954 is different is based on the following data:

(1) In 1942, when I was in charge of the local sanatorium, youths of 17 who volunteered for work of national importance came to me for examination: X-ray examination showed that more than a third had tuberculosis, which in many cases necessitated sanatorium treatment. The youths called to H.M. Forces did not have an X-ray examination. Many returned after a few months' service, discharged because of tuberculosis. Had they had an X-ray examination on call-up they would never have been accepted. Of 225 deaths since 1940, 64 were in Service personnel.

(2) In 1949 a tuberculin-sensitivity survey carried out among all school-children (4000) and in youth clubs, factories, offices, shops, &c., yielded very high positivity rates: 5–6 years, 18%; 5–12, 26%; 15–20, 69%; 21–25, 81%; 26–30, 91%; 30 +, 96%.

(3) In every case of tuberculosis since 1950 in a Lewis person who has left the island, I have a record of a positive reaction before they left home.

Thus, I believe that the islander develops an already existing focus, which breaks down under studies or work, rather than that he contracts the disease for the first time in the cities. Contrast the following positivity rates after a re-survey of school-children in 1954: 5–6 years, 2·7%; 5–12, 14%. It may be thought, as I myself believed in 1949, that my positive-reactor rate was exaggerated, but now I am convinced that the results were substantially true because, in the case of school-children, I had several hundreds examined radiologically by the regional hospital board and many of the children showing definite evidence of intrathoracic tuberculosis have now reverted to negative reactors. Further, in the case of those over 15 the tests were all intradermal. (1, 10, and 100 T.U.) and the vast majority reacted to 1 T.U.

This is why I say that the situation could, in a few years, become what it is commonly held to be. B.C.G. vaccination, I may add, was offered and given to anyone of any age who was negative to 100 T.U. following the 1949 survey.

Stornoway, Isle of Lewis. R. STEVENSON DOIG.

1. Hess, E. V., Macdonald, N. *Lancet*, 1954, ii, 132.

SIR,—When the B.C.G. schemes are fully developed in Ireland the problem of the tuberculin-negative Irish emigrant in Britain should be largely solved and the anxiety at present felt by chest physicians, both in Ireland and Britain, allayed. Varying degrees of progress have been made up to the present. Some counties have only just begun B.C.G. vaccination, but in a few others progress is well advanced. In Tipperary (North Riding) priority has from the beginning, 1950, been given to testing and vaccinating contacts, adolescents, and young adults. Vaccination was offered to all between the ages of 14 and 30 years in 1951–52. School-leavers have been done each year since that time. 65% of the estimated total of adolescents between 15 and 19 were then dealt with, but the response from those between 20 and 30 was poor, the average being not much better than 30%. However, with the addition each year of school-leavers to the general pool a respectable total is being built up: for the last two years, 85% of school-leavers have been vaccinated.

It is yet too early, of course, to report results, but the figures of new cases of pulmonary tuberculosis occurring in 1954 are beginning to show a very favourable picture, which I believe is due to the vaccination. The proportion of new cases in people between 14 and 29 years, which was 54% in 1951, and in the two following years 51% and 47%, has dropped this year to 38%. At the other end, the proportion of new cases in those over 40 has risen from 27% to 42%. In 1950 8 new patients were returned from England, either for treatment or convalescence. In the following years the numbers have fallen to 5, 5, 3, and only 1 in 1954. These statistics show some improvement at least in the position which obtained four years ago, and I believe that over the next two or three years there will be greater improvement.

There are at present two unknown factors which temper my optimism. One is that the youngest age for emigration from this country is from 17 to 19 years of age. Will a vaccination done at 13 in a rural district protect until that age when the occurrence of a natural infection in the intervening years is not likely? Secondly, we are at present using in this country two prevaccinal tests, with 1 in 5000 and 1 in 100 old tuberculin. An unknown number of those reacting to the 1 in 100 dilution are still susceptible to tuberculosis. Already in this county, with our small numbers, 2 cases of primary pleurisy with effusion and a primary complex have occurred in young persons who have been recorded as being positive to 1 in 100. There is no doubt but that, in the future, the strength of the last prevaccinal test will have to be cut down.

The figure of 14·5% positive at the age of 18, reported by Flynn and Joyce,[1] should not be taken as general for all Ireland. The figures for Tipperary (N.R.) are: 13 years, 10% (2145); 15, 44% (600); 18, 55% (490); 22, 63% (283); 25, 70% (227).

From the age of 15 to 24 years the proportion of females was, on average, 5% less than that for males. Over that age the figures were nearly equal. Even though the size of the average Irish country town is only between 1000 and 6000, there is a striking difference between the infectivity-rate in the urban and truly rural portions of the country. In the rural portion of this county, 41% between 15 and 19, and 53% between 20 and 24, are tuberculin-positive. In the towns the corresponding figures are 72% and 82%.

Public Health Offices, Nenagh, Tipperary. J. B. O'REGAN.

1. Flynn, M. P., Joyce, J. C. *Tubercle*, 1954, 35, 270.

BED-WEIGHING MACHINE

SIR,—Dr. Flear (Jan. 8) and Dr. Darmady [1] have not mentioned the possibility of error in estimating the variations in weight of a patient due to alteration in the moisture content of the bed-clothes. An error due to this may be significant. Through the courtesy of the burns unit at the Birmingham Accident Hospital, I was able to use the Avery weighing machine for the following experiment:

A mattress with bed-clothes and linen were exposed to the normal November atmosphere in an unheated part of the hospital. A bed was then made up and heated by an "artificial body" (a steel cylinder of approximately the same surface area as the body) and heated by two light bulbs to a temperature of about 106°F between the cylinder and the mattress. The bed was kept in a room at a temperature of 78°F for forty-eight hours. The mattress alone lost 15¼ oz.; the mattress and bed-clothes together lost 21 oz.

These conditions are, of course, entirely artificial and the opposite is more likely to occur in practice. Mattresses and bed-linen are put into use after being thoroughly aired and they may fairly quickly pick up moisture from the atmosphere or from the patient. The practical way to overcome this difficulty is to use a mattress such as a 'Dunlopillo,' which did not alter its weight in a similar experiment, and to remove as much as possible in the way of blankets and linen from the bed each time the patient is weighed.

Selly Oak Hospital, Birmingham, 29. W. M. PHILIP.

HEARING TESTS

SIR,—While agreeing with most of Professor Ewing's remarks in his statement, published in your issue of Jan. 1, on sweep-frequency screening tests of hearing, it seems desirable to point out that partial deafness of the severity necessitating special educational treatment should be detected before the age of five years if it is of congenital origin. Such deafness should be detected preferably before the age of one to two years so that the child may receive auditory training during the period of normal physiological speech development. If acquired deafness should occur, rehabilitation should start straight away, as soon as the child is well enough.

It would be unfortunate if the impression were given that it is satisfactory to defer tests of hearing until the routine group tests are done at the age of five. The search for deafness at an earlier age is long overdue. The postnatal clinic would seem an ideal place for increasing the mother's awareness of the possibility and implications of partial deafness.

London, W.1. EDITH WHETNALL.

REPAIR OF FEMORAL HERNIA

SIR,—May I add my testimony to that of Mr. Pearce (Jan. 8)? For some years I have also used the suprapubic extraperitoneal approach for femoral hernia.[2] Watson,[3] having cited this and seven other perabdominal methods, dismisses them as "not in general use"; but I find it rapid, easy, and satisfactory.

The method is similar to that described by Mr. Pearce except that it is preferred to reveal the extraperitoneal tissues by divaricating the recti and pyramidales through a short midline incision slightly overlapping the pubis. It is convenient to avoid the branches of the epigastric and obturator vessels by mobilising the sac posteriorly, then laterally, and finally anteriorly. It is usually delivered from the canal with ease and may be ligated and dislocated so as to present smooth peritoneum at the femoral ring. Like Mr. Pearce, I have found repair unnecessary, and I hope to produce statistical evidence for this shortly. On one occasion it was necessary to evacuate a hæmatoma in the infra-inguinal fold, and I took the opportunity to inspect the ring, which had closed spontaneously in a few days.

If the hernia is strangulated the neck of the sac must be controlled with clamp or finger to prevent the sanguineous exudate from entering the general peritoneum. If gut resection is necessary (and that is rare), it may be done with ease without extra incision.

Ill effects are rare. I have had one hæmatoma and one midline hernia, which was in a very old man. I have seen a patient with a good result two years after a septic dehiscence of the wound. The operation needs a relaxing anæsthetic and is not very suitable for local infiltration. It is better avoided if one is not sure whether the lump may be an inflamed gland. It is rather messy in fat patients with old and adherent hernias, but so are most methods.

The main advantages are the ease with which the sac can be excised and high-ligated, and the stump dislocated; and the opportunity clearly to inspect the femoral ring, bladder, great vessels, and, if necessary, peritoneal contents. The approach gives access to all inguinal, femoral, and obturator orifices. I use it for closing the ring of sacular direct inguinal hernias with a nylon-gauze prosthesis. It is, however, hardly worth doing for oblique inguinal hernias unless at the same time as other retropubic operations.

Hull. J. CLAPHAM COATES.

OPERATIONS ON THE HEART

SIR,—I must take serious issue with you over your leader of Dec. 25. You state that "Wilson et al. have identified two fundamental types of electrolyte pattern in the cardiac patient," the reference being to a paper published in 1954. The existence of hyponatræmic states in patients with cardiac disease has been known for at least six years, and a great deal of work has gone into explaining the mechanism of this development, most of which bears little relationship to your subsequent discussion.

You begin by stating arguments that hyponatræmia represents sodium depletion brought about by a salt-restricted diet, and on this basis advocate intravenous hypertonic saline. But further on we are told that "commonly the total exchangeable-sodium value is high." The question of sodium depletion in these patients cannot be settled by the value of serum-sodium alone, but must be determined by balance studies and/or muscle-biopsy analysis. Depending on how great the hyponatræmia is, how much œdema (or extracellular sodium) the patient has, and how much sodium has been transferred into cells, these patients may be either sodium-depleted, or have a total excess of sodium in their body-fluids as a whole.

This is, however, only a side-issue in the electrolyte physiology of hyponatræmia, for the studies of Squires et al.[1] and Cort and Matthews [2] have shown that such patients have an intracellular potassium deficiency which is partly replaced by an increase in intracellular sodium and water. The serum-sodium level represents not the state of body-sodium stores, but the state of extracellular osmotic pressure, which in turn reflects changes in intracellular osmotic pressure. If serum-sodium concentration is low, it reflects a lowering of intracellular osmotic pressure, or a disturbance of forces within the cell maintaining extracellular osmotic pressure. These patients are indeed ill, but it is changes in intracellular osmotic pressure, sodium content, and pH that threaten them, not the state of body-sodium stores. The administration of hypertonic saline to patients who have hyponatræmia with potassium deficiency may raise serum-sodium levels for a short time, but will soon lead to little more than a further increase in œdema fluid. If such patients respond to anything clinically or biochemically, it is to prolonged administration of both potassium and protein, since both are needed to replace depleted states of the intracellular fluid. My own experience now includes the successful treatment of 25

1. Darmady, E. M. *Lancet*, 1954, ii, 689.
2. Henry, A. K. *Ibid*, 1936, i, 531.
3. Watson, L. F. Hernia. London, 1948; p. 314.

1. Squires, R. D., Singer, R. B., Moffitt, G. R. jun., Elkinton, J. R. *Circulation*, 1951, **4**, 697; Squires, R. D., Crosley, A. P. jun., Elkinton, J. R. *Ibid*, p. 868.
2. Cort, J. H., Matthews, H. L. *Lancet*, 1954, ii, 1202.

hyponatræmic cardiac patients with extracellular hyponatræmia, hypochlorræmia, and alkalosis by this therapy, while the administration of hypertonic saline has led to everything from pulmonary œdema to a tremendous thirst (with water by mouth these patients immediately dilute themselves back to their initial low serum-sodium level). Hypertonic saline has led to everything, that is, except a lasting improvement in the patient's biochemistry. The recent demonstration of the relationship of potassium metabolism to the therapeutic action of digitalis only further underlines the importance of metabolic preparation of patients for cardiac surgery, but it must be a detailed and careful analysis.

Institute for Cardiovascular Diseases, Prague. JOSEPH H. CORT.

A BLOOD-TRANSFUSION PUMP

SIR,—I was interested to read in your issue of Nov. 13 a description of a transfusion pump by Mr. Martin. I can confirm his remarks regarding the value of rapid intravenous transfusion, which appears to be as efficacious as the inter-arterial route.[1]

I have been using a transfusion pump with the same features as that devised by Mr. Martin for the last five years. It was described in the *British Medical Journal* in 1953,[2] and has been manufactured for the last two years by the Bax Engineering Co., Wheatley, Oxfordshire. I may add that the principle of the flexible tube compression pump has been known for over fifty years, the main difference between the older models and those described by Mr. Martin and myself being the inclusion of a method of adjustment of the pump for different tube diameters. This improvement avoids the necessity of using special tubing and opening of a transfusion line.

University College of the West Indies, St. Andrew, Jamaica. V. J. KEATING.

DISTRIBUTION OF CHRISTMAS GIFTS

SIR,—I am sure that your readers will be pleased to learn that the contributions to provide Christmas gifts for the beneficiaries of the Royal Medical Benevolent Fund amounted to £2775. We were able to distribute £8 to each of them.

The warmth of gratitude expressed in letters of thanks would have gladdened the hearts of the contributors.

WEBB-JOHNSON
President,
London, S.W.15. Royal Medical Benevolent Fund.

THE LABORATORY TECHNOLOGIST

SIR,—As medical laboratory technologists we feel that Dr. Davey's article of Dec. 11 cannot be allowed to go unchallenged.

We feel that the present-day technologist has sufficient understanding of the techniques available to him to make an intelligent appraisal of them and that he therefore will not take the short cuts Dr. Davey mentions. It is only in those laboratories in which a thorough training (theory as well as practice) is not provided that the situation he describes can arise. Furthermore, technologists are not in the habit of taking unfair advantages of their medical associates. We are not such a Machiavellian band.

The present-day entrant to medical laboratory technology is, and should be, an intelligent person, and he is as capable of reliable and honest work as a medically qualified person. If this were more generally understood and accepted, relations between the clinical pathologist and technologist would be easier. It is the seeming lack of mutual trust that is driving away the more suitable entrants into other fields.

Professor Bedson, in an address to the London branch of the Institute of Medical Laboratory Technology, spoke of the increasing difficulty in finding suitable male entrants. He suggested that an increase in salaries would overcome this problem. Such an increase would certainly be appreciated, but there are those who feel that an improvement in status would be of greater value.

Dr. Davey's article certainly does not help to overcome the problem of recruitment.

A. W. PALMER
Aldershot, Hants. PETER NAYLOR.

THROMBOPHLEBITIS FOLLOWING INTRAVENOUS INFUSIONS

SIR,—Mr. Jones's experience (Nov. 6) must have been shared by most of us in greater or lesser degrees. From time to time attempts are made to incriminate a single factor, and the current favourite appears to be a sulphurous compound in the red rubber of the standard giving-set. There are so many variables in this field that only by pooling knowledge can definite conclusions be reached. My object in reporting my own (admittedly incomplete) investigations is to stimulate such widespread inquiry.

The general aim should be to eliminate each likely factor in turn by studying large numbers of comparable infusions. The factor investigated in my own inquiry was red rubber. I first studied 79 infusions in 46 patients, using the standard Regional Blood Transfusion Service drip sets; a similar study was then made of infusions in which plastic tubing had been substituted for rubber.

A robust dripper was made by Mr. Watts, of Hammersmith Hospital technical staff, who modified a 'Plim' syringe so that the sizes of 'Polythene' tubing then available (1 to 4) would fit the lower end. Mr. Watts also made some small metal adaptors to connect the polythene tube to 'Record' needles. The apparatus was unpopular in the theatre because the anæsthetist was unable to use it for intravenous injections, so a two-way tap was added to the needle in the theatre and removed before returning the patient to the ward.

Cold polythene does not compress easily, so the drip-rate was controlled by altering the height of the bottle. Rapid infusion is not possible with the smaller sizes of polythene, but I understand that larger sizes are now available.

Only 10 infusions were given with polythene tubing, but the fact that such drips were not entirely trouble-free suggests that something other than rubber is the cause of the problem. On the other hand, in 5 of the 10, there were no reactions; in 5 there was only simple thrombosis (mild reaction); and in none was there any pain, redness, or tenderness (moderate and severe reactions). The figures for the rubber series were 15 (19%) with no reaction, 17 (21%) with mild reactions, and 47 (60%) with moderate or severe reactions.

The results once again emphasise that infusions of over eight hours' duration are the ones likely to give trouble.

Of the 15 rubber-tubing infusions without reactions, none lasted more than eight hours, and of the 5 plastic-tubing infusions without reactions 3 lasted less than eight hours, 1 lasted nine hours, and 1 lasted twenty-four hours. That time is not the complete answer is shown by the 14 cases with reactions after infusions lasting eight hours or less; in 1 case the reaction was severe. Of the 17 cases with mild reactions after rubber-tubing infusions, 13 had had infusions of ten hours or less, whereas in none of the 5 cases with mild reactions after plastic-tubing infusions had the infusion lasted less than ten hours. These results show that prolonged infusions through rubber tubing are more dangerous than prolonged transfusions through plastic tubing.

It was impossible to say whether the type of fluid given influenced the incidence of thrombosis, since the blood-transfusions were usually of short duration while the dextrose or saline infusions were more prolonged. There was no apparent association between the type of illness or length of operation and drip thrombosis. More than half the patients were between the ages of fifty and eighty: there was no obvious connection between severity of reaction and age. In 12 cases it is recorded that a mask was worn while setting up the drip, and 3 of these had no reaction. 11 transfusions were started in the theatre and only 1 of these (a two-hour blood drip) was trouble-free. Records of dressings applied to the

1. Gardner, C. C., Keating, V. J. *Anæsthesia* (in the press).
2. *Brit. med. J.* 1953, i, 94.

puncture site are incomplete, but it is certain that some cases with no dressing had no reaction, and some with adequate sterilisation had severe reactions. There seems little doubt that the reaction is not an infective process.

In 6 cases cannulæ were used on forearms, and 3 developed severe reactions. In 4 cases cannulæ were used on ankles, and in all severe reactions developed, supporting the common belief that reactions in the leg are commoner and more severe than those in the arm; none of the leg infusions lasted less than twenty hours. The number of severe reactions with "cut-down" transfusions was much higher than with simple needling, and this cannot be explained satisfactorily by the time factor because the number of needle drips running for twenty hours or more without more than a moderate reaction was almost a third of the total.

I have prepared a table giving full details of each patient and I will gladly supply a copy to any of your readers who may be interested.

These studies were made in the surgical wards of one small and three large London hospitals, but the initial work was done at the Postgraduate Medical School of London. It is a pleasure to acknowledge the encouragement and help of the medical, nursing, and technical staffs of the school and the hospitals.

Odstock Hospital, Salisbury, Wilts. J. MORRIS.

TERATOMATOUS NÆVI

SIR,—According to my definition of all that I would classify under nævi and nævoid structures,[1] I would include some abnormalities which I now think are really of teratomatous nature—for example, what I termed osteo-lipoma of the pituitary body long ago.[2] I venture to write because I believe it is an important consideration. These structures may contain embryonic remnants, potentially capable of producing malignant tumours, such as chorion carcinoma (compare my note[3] on "male" and "female" teratomata).

London, N.W.1. F. PARKES WEBER.

SANATORIA

SIR,—In tuberculosis, as in all diseases, we have to use specific as well as constitutional methods of treatment—the first indicated by the disease, the latter adapted to the psychophysical personality of the patient, with the object of raising his resistance. The specific methods of treatment (antibiotics, chemotherapy, and surgery) are the greatest help, but they cannot alone produce a complete cure, and constitutional methods must always be the centre of our endeavours.

Constitutional methods cannot, however, be vaguely dismissed as "mental rest, pure air, adequate nutrition." Recent work on metabolism, endocrinology, neurovegetative physiology, and medical psychology allows for a more precise knowledge of the human constitution, and thus for a more accurate picture of the constitutional powers of each particular patient. This makes for a more rational application of dietotherapy, climatotherapy, psychotherapy, and of certain constitutional pharmaceutical agents. The sanatoria are institutions where such constitutional procedures are applied, and they have undoubtedly rendered great service.

The fact that sanatorium treatment has often been applied on wrong psychological lines—as that novelist of genius, Thomas Mann, showed in his *Magic Mountain*—does not mean that such treatment should be abandoned. Sanatoria will always be useful but their methods have to be modified, because, whereas even a few years ago sanatorium treatment was "everything" in tuberculosis treatment, today it is only one factor in a complete therapeutic constellation: and in sanatorium treatment the new knowledge of constitution should be taken into consideration.

London, W.1. A. P. CAWADIAS.

CANCER OF THE LUNG

SIR,—The absence of any mention of a relationship between cigarette-smoking and lung cancer by the chief medical officer of the Ministry of Health in his annual report is certainly difficult to understand. Although most members of the public have now heard of this connection, it is surely time that more authoritative advice was given to them, and the same kind of effort and initiative which was put into the successful campaign against diphtheria should now be directed against lung cancer. Although other factors may be important, few can seriously doubt that cigarette-smoking is the most important.

Apart from the work of Bradford Hill and Doll, Hammond and Horn [1] have produced convincing evidence from the United States. In a study of 187,766 white males between the ages of 50 and 69 they found that the death-rate in all smokers was 52% higher, and amongst heavy smokers 75% higher, than in those who had never smoked. The higher death-rate in the smokers was largely due to cancer of the lung and coronary disease. Such evidence emphasises the need for the widest education of the public on this subject.

London, W.5. KEITH BALL.

ENDOCARDIAL FIBROSIS

SIR,—I was interested to read Dr. Still's article of Dec. 18. I suggest that this condition should have been called endocardial fibro-elastosis, as the prominent feature is the presence of generalised endocardial thickening with proliferation of both collagenous and elastic tissues. In adults, mural thrombi, with resultant emboli, can occur. The myocardium is usually normal, though patchy myocardial fibrosis is sometimes also present.

This condition should not be confused with endomyocardial fibrosis found in East and West Africans. Endocardial fibroelastosis in infancy is associated with other congenital anomalies—i.e., hypoplasia of the aorta, bicuspid aortic valves, coarctation, patent ductus, and aortic and mitral stenosis due to involvement of the endocardium of the valves by the same process. Some of these were also present in Dr. Still's cases. There is a family history of congenital heart-disease in 20% of these cases.[2]

Gowing [3] mentions that most affected children died in the first year of life, though Dr. Still says that sudden death due to this cause in infancy is not widely recognised in this country. I should like to point out that this condition can also occur in other age-groups. White and Fennell [4] described two cases in men aged 71 and 50, both of whom suffered from angina pectoris and eventually died of congestive heart-failure. Thomas et al.[5] have described 20 cases with necropsy reports and have arbitrarily divided endocardial fibro-elastosis into three groups—infantile (under 2 years), childhood (between 2 and 16), and adult (over 16). The hearts in all of the cases in this condition are usually enlarged and the electrocardiograms show various arrhythmias, heart blocks, and ST changes. The clinical picture may also vary in different cases.

Although, as Dr. Still points out, the ætiology is unknown, Johnson [2] has put forward an interesting suggestion that endocardial fibro-elastosis results from anoxia of the endocardium due to premature closure of the foramen primum or foramen ovale at an important stage of intra-uterine life. This condition has also been discovered in stillborn infants.

Victoria Hospital, Blackpool. HARI VAISHNAVA.

1. Parkes Weber, F. On Nævi and Miscellaneous Subjects. London, 1952; p. 7.
2. Parkes Weber, F., Daser, P. *Trans. path. Soc. Lond.* 1907, **58**, 219.
3. *Med. Pr.* 1954, **237**, 550.

1. Hammond, E. C., Horn, D. *J. Amer. med. Ass.* 1954, **155**, 1316.
2. Johnson, F. R. *Pediat. Clin. N. Amer.* February, 1954.
3. Gowing, N. F. C. *J. Path. Bact.* 1953, **65**, 13.
4. White, P. D., Fennell, R. H. jun. *Ann. intern. Med.* 1954, **41**, 333.
5. Thomas, W. A., Randall, R. V., Bland, E. F., Castleman, B. *New Engl. J. Med.* 1954, **251**, 327.

LYMPHŒDEMA PRÆCOX

SIR,—Having read your annotation of Jan. 1, we would like to draw attention to a recent publication [1] by ourselves on the treatment of this condition. Although the decision to operate must remain an individual one, it should no longer be necessary to reserve radical excision for the huge leg. Size alone is an inadequate criterion of operability, and other factors, particularly the recurrence of acute erysipeloid attacks, are of equal importance.

The technique which we have described allows the whole of the subcutaneous tissues of the lower leg and the dorsum of the foot to be excised and grafted at one operation lasting just over one hour. During the excision, bleeding is prevented by using a pneumatic-cuff tourniquet and neither hæmorrhage nor shock has been a feature. It is therefore justifiable to offer operation to patients with relatively mild degrees of lymphœdema.

Plastic Surgery and Maxillo-facial Unit, Glasgow Royal Infirmary. THOMAS GIBSON
J. SCOTT TOUGH.

ARTIFICIAL HIBERNATION IN POLIOMYELITIS

SIR,—In the Brunswick epidemic of poliomyelitis in 1952 62 early cases were treated with continuous sedation, using the barbiturate 'Somnifaine.' [2] Paralysis developed less frequently, and was less extensive, than in a control group of patients who did not receive the drug.

In view of this I suggest that it would be worth while investigating the effect on poliomyelitis of artificial hibernation, since each constituent of the "lytic cocktail" has a relevant pharmacological action. During the phase of "minor illness," and in the preparalytic stage, chlorpromazine and promethazine would sedate the patient and rest the motor neurones, without endangering the brain-stem centres. Chlorpromazine relieves pain and induces a feeling of euphoria—both beneficial effects in the paralytic stage of the disease, especially when the patient has to have artificial respiration. In bulbar respiratory paralysis chlorpromazine would, by lowering the basal metabolic rate, decrease oxygen consumption and so lessen the risk of anoxæmia. The analgesic effect of both chlorpromazine and diethazine would reduce respiratory pain and allow deeper and more regular respiration; and by their atropine-like action chlorpromazine and thiazinamium ('Multergan') would diminish the mucous secretions in the respiratory tract.

Brunswick, Germany. TH. BREHME.

"TAKE A COUPLE OF FAT VIPERS"

SIR,—With reference to Francis Steer's observations on viper wine, the therapeutic administration of the viper dates from antiquity; it was used by the Emperor Nero's physician and its virtues were extolled by Galen.

Dr. Lyonnet [3] tells of a letter written in 1675 by a French noblewoman which included a recipe for the preparation of a soup made from vipers. Fat of the viper was claimed to have aphrodisiac properties, and its dried liver was said to stimulate contractions of the uterus. Preparations including the viper as a constituent were still contained in the French Codex of 1908. The medicinal value of the viper has not as yet been substantiated, but it seems unlikely that any modern physician would deem it necessary to undertake a therapeutic trial.

The Royal Free Hospital, North Western Branch, Hampstead, London, N.W.3. F. CLIFFORD ROSE.

SIR,—Those who are attracted by Mr. Steer's suggestion to "take a couple of fat vipers" may be interested in the following recipes taken from *The Dispensatory of the Royal College of Physicians, London* (1746).

JUS VIPERINUM

Take a viper of a middle size without the skin, head or entrails; of water a quart. Boil to about a pint and a half; remove all from the fire, and when the water is cold, if the viper be not a dried one, take away the congealed fat. Then take a chicken of a middle size drawn and the skin with all the fat taken off, and put it whole into this decoction while cold, set it upon the fire till it boils, then remove it from the fire, take out the chicken, cut the flesh of it into small pieces, which put again into the water and set it over the fire but as soon as it begins to boil up pour it off, first having taken away whatever scum may have risen.

VINUM VIPERINUM

Take of dried vipers two ounces, of white wine three pints. Infuse with a gentle heat for a week, and then strain the wine off.

Surbiton, Surrey. A. C. POND.

HÆMOLYTIC TRANSFUSION REACTIONS

SIR,—I should like to correct the impression, conveyed by a statement in Dr. Heggie's letter in your issue of Dec. 25, that the revised edition of the Medical Research Council's memorandum no. 9, *The Determination of Blood Groups*, has already been published. This memorandum is still undergoing revision and the new edition is not likely to be available for some time.

Medical Research Council, London, S.W. 1. JOAN M. L. STEPHEN
Publications Officer.

APICAL LOCALISATION OF PULMONARY TUBERCULOSIS

SIR,—I cannot agree with Dr. Cudkowicz's explanation (Dec. 25) of this phenomenon, with regard to what has been called "post-primary" tuberculosis.

The apical pleural bronchial artery may have a constant course, but the primary pulmonary tuberculous focus does not have a constant position, and may be placed in any part of the lung. Thus there is no guarantee that the lymph-node component of the primary complex (unless extremely extensive) will be in constant relation to any small hilar vessel. The enlargement and tortuosity of the bronchial arteries come afterwards, when the lung lesion is of some standing, but are in no way specific for tuberculosis. They may occur in any chronic lung disease accompanied by the formation of new connective tissue—e.g., bronchiectasis and pneumoconiosis.

When we come to consider apical "adult-type" tuberculosis generally, we find that doubt has been thrown on the view that such a lesion is necessarily preceded by a childhood infection.[1] There is evidence that tissue maturation alone may dictate a primary adult-type apical infection. Dr. Cudkowicz's theory will not account for such a case.

I feel that the weight of the present evidence favours the opinion that oxygen lack is the most important factor.

Department of Pathology, Llanelly Hospital. A. L. WELLS.

ISOBEL CRIPPS CENTRE

Dr. Wilfred Barlow writes:

It is not surprising that Mr. Neil (Dec. 18) has found members of the medical profession objecting to his "School of Self-Management." Opinions may reasonably differ on how far doctors can demand a say in matters of mental or physical training for their patients; and a physical or psychological "educator" who deals with such conditions as asthma is presumably at liberty to disregard the medical profession if he chooses. But, if he seeks general medical approval for his training, as Mr. Neil appears to do in his letter, it is difficult to see how a case can be made for not insisting on the safeguards which are given, for example, by physiotherapists.

I should be the last to deny that the Alexander technique, of which Mr. Neil is one of the many trained teachers, needs to be utilised by the medical profession: but I would sooner see this end achieved by research and by training with adequate safeguards than by advertisement campaigns.

The complexity of some of the issues raised here is brought out in the House of Lords report on the Osteopaths Bill (1935), published by the Stationery Office.

1. Gibson, T., Tough, J. S. *Brit. J. plast. Surg.* 1954, **7**, 195.
2. Brehme, T., Leuterer, W. *Lancet*, 1953, **i**, 700.
3. Lyonnet, M. B. *Lyon méd.* 1954, **192**, 62.

1. Anderson, W. A. D. Pathology. London, 1949.

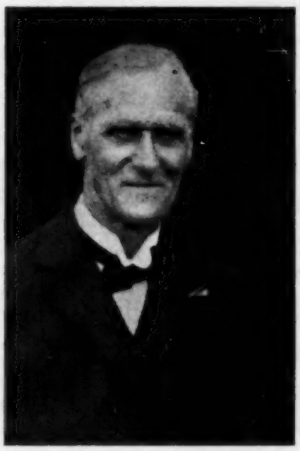
Obituary

ARTHUR KEITH

Kt., M.D. Aberd., D.Sc., LL.D., F.R.C.S., F.R.S.

WHEN Arthur Keith was appointed conservator of the Hunterian museum of the Royal College of Surgeons of England he was already known to his own profession as an outstanding anatomist and embryologist. At the college he won general recognition as an anthropologist and Darwinian evolutionist.

He was born in 1866 on a small Aberdeenshire farm, sixth of the ten children of John Keith. At the country schools where he began his education he made an unimpressive showing. He was only too willing to interrupt his lessons to help his father with the harvest, and when he was 16 he left school to learn to be a farmer. But the tales of a student who lodged with the Keith family led him to think there might be something in an academic life after all. His Latin and Greek, the family held, were so poor that he could never hope to enter the arts faculty, but with two years' hard work he might manage to enter as a student of medicine. His father offered him a "wraith" (term) in Aberdeen at Gordon's College to see what he could make of it.



In 1884, after this hesitant start, he entered Marischal College, where, as he later wrote, John Struthers "opened the Darwinian gates for me." Keith carried off the anatomy class prize—the sixth edition of the *Origin of Species*—but he was not one of Struthers's favourite students, perhaps because he frankly admitted that he learned more in the dissecting-room than in the lecture-room. His father died at the beginning of his medical studies, and the major bursary that he won when he topped the scholarship list eased the family finances. In 1888 he took his M.B., with the highest honours and was awarded the John Murray medal as the most distinguished graduate of the year.

In 1889, after a few months in general practice, he was offered, on the recommendation of his professor of botany, an appointment as medical officer to a mining company in Siam. The flora of the region was imperfectly known and it was essential that the candidate, apart from his medical duties, should collect botanical specimens for Kew Gardens. At his post at Paron, Keith found that 80% of the villagers suffered from malaria. Its transmission by mosquitoes was still unknown, and he began to dissect monkeys to discover whether they were infected. His old love of anatomy reasserted itself and he became a subscriber to the *Journal of Anatomy*, which he was later to edit. He sent some specimens to Kew, but his real goal was now anatomy and he returned to England in 1892, with £450 of savings, to continue his studies in the London medical schools.

Besides his formal studies at University College in preparation for the F.R.C.S., he began to read the literature of the ape world, of which his dissections in Siam had given him first-hand experience. Professor Thane gave him a small room at University College and he obtained carcasses of the primates from the Zoological Gardens to add to his data from Siam. As an early result of these studies he was awarded in 1893 the Struthers medal and prize of the University of Aberdeen for his paper comparing the ligaments of man and ape. The following year he obtained the F.R.C.S. and his M.D. degree for his thesis on muscles. In 1895 he read Eugene Dubois' paper announcing the discovery in Batavia of a "missing link." Keith came to the conclusion that the fossil skull was entirely human and represented an early stage in man's evolution. From this began his study of the antiquity of man and his first paper on *Pithecanthropus erectus* was published in *Science Progress* in 1895.

The same year the senior demonstratorship in anatomy at the London Hospital Medical College fell vacant and Keith obtained the post. His money was finished and he was desperate to get the job: the entry in his diary ran "Got it—thank God; a beginning." Teaching, he later confessed, did not come easily to him at first; but even in those early days he inspired in many of his students, including Frederick Wood Jones, a love of anatomy and research. The following year he was also appointed curator of the college museum and in due course he became joint lecturer and finally head of his department. As a teacher he was anxious to equip his students for clinical practice—"I wanted the old, practical, utility anatomy reintroduced and taught again"—and he diverted his research from the evolutionary history of the structures of the human body to their rôle in the living organism. In 1901 he undertook a series of X-ray investigations to show that the entire diaphragm, and not only the right and left domes, moved downwards when a breath was taken. On this study was based his Hunterian lectures on Glenard's disease (1903). His interest in visceroptosis continued, as is shown by the last letter from him which we published (*Lancet*, 1953, ii, 450). His other work as a practical anatomist included his researches into the mechanism of respiration and into the muscular structures of the heart.

In 1908 Keith left the London Hospital to become conservator of the Hunterian Museum of the Royal College of Surgeons. The years at the London had been, he held, the most "critical and profitable" of his life, but at the College of Surgeons he hoped to be able to turn again to the evolutionary and anthropological problems where his real interests lay. He began at once to collect material for an anthropological history, and in 1911 he chose as the subject of his Hunterian lectures the Remains of Fossil Man. His work at, and for, the college soon won extramural recognition. In 1911 the first, and most prized, of his six honorary degrees was conferred on him by Aberdeen University, and in 1913 he was elected F.R.S. His book on the *Antiquity of Man* was written at this time, though it was not published till 1915.

The 1914–18 war again shifted the emphasis of his work to practical anatomy. War wounds and bone-grafting gave rise to old and unanswered questions, and Keith's lectures for these years were published in 1919 with the title of *Menders of the Maimed*. In the same years he also published *Engines of the Human Body*. But throughout the war Keith continued his anthropological work, and as president of the Anthropological Institute (1914–17) he gave four important addresses in which he set out his evolutionary doctrine. In 1917 he was appointed to the Fullerian chair of physiology of the Royal Institution, which gave him a further opportunity to expound his views. In 1927, as president of the British Association, he reviewed the confirmation offered to Darwin's theories by modern science. His growing reputation was shown by the knighthood conferred on him in 1921. The busy round of research, writing, and lecturing continued till in 1933, owing to ill health, he retired from his post at Lincoln's Inn Fields to become master of the Buckston Browne research farm at Downe. Here he happily combined work in the study with work in the fields. His *New Theory of Evolution* appeared in 1948, and his *Autobiography* in 1950. After the death of his wife in 1934 the interests of the farm furnished him (as he put it) with companionship as well as recreation, and the day before he died on Jan. 7 he was busy with his pruning-hook among the fruit trees.

TRIBUTES

J. K. writes: "The value of Sir Arthur Keith's record in the fields of anatomy and anthropology is known throughout the world, and wherever the true worth of

these sciences is appreciated men honoured and respected him. During his long life, packed with such untiring industry and so much rich experience, his contributions inevitably brought him recognition as a worthy successor of Hunter, Darwin, and Huxley, giants of past days, but none of these things could account for that real affection which all who knew him intimately soon discovered they possessed for the man himself.

"Like others truly great, neither honours nor achievement changed him. His voice was gentle and soft-spoken, and his transparent humility encouraged those of us who knew so much less than he did to come and slake our thirst for knowledge at the fountain head. His lectures in his early days at the Royal College of Surgeons some of us will never forget, and it is their atmosphere, more perhaps than their content, which lingers with us still.

"In the old tier-seated theatre, he, if anyone ever did, could make the dry bones live; how he treasured those priceless specimens which he had selected for us with such insight from the museum of which he was the Conservator; and how obviously he enjoyed every moment of the lecture as much as we did! I think 'revelled in' would be the more apt word to describe the way he spent the all-too-short hour devoted to describing, explaining, and applying the facts of structure and function revealed by each object with its own particular story to illumine a present-day point of clinical application.

"Like all good teachers his delivery was natural and completely devoid of tension. It gave us the impression of effortlessness. No notes were needed, for his princely memory recalled at each succeeding moment what he had already prepared just for that moment as a link in the chain of his exposition or argument, and the impression at the end was that he and we had arrived where we had been told we were going, but that there was still a great deal more our guide could have shown us had time sufficed.

"Sir Arthur had that rare gift of being able to make a difficult and complicated subject not only comprehensible but interesting to the uninitiated. Those of us who heard his popular lecture at the annual meeting of the British Medical Association in Newcastle in 1921 on the Healing of Prenatal Wounds have never forgotten how with appropriate lantern-slides he made extracts from the story of human embryology not only intelligible but fascinating to the lay members of a very large mixed audience. Whether addressing the crowded theatre or in quiet conversation, this great gentleman was always the same happy warrior, characteristically at ease talking about the pursuits he loved and to which he had devoted his life.

"His eyes could on occasion flash fire, for in his contentions for truth his soft-spoken voice could become firm as the grey granite of his native city. How firm and yet how kind. For this, too, some of us will always gratefully remember him."

R. J. L. writes: "During his 25 years as curator of the Hunterian museum, Keith became well known far outside the circle of his scientific contemporaries. His opinions on evolution, and on the nature of man and his place in the cosmos came to be discussed and quoted by many a non-scientific writer. He was a staunch Darwinian and an ardent naturalist. His reputation spread far and wide, and thousands of pilgrims visited the Museum where he presided like a high priest in his temple. He was an accepted authority on human anatomy, but it was as anthropologist and Darwinian evolutionist that he grew to such stature during those years. Anthropology and the processes of evolution remained his principal interest until the end of his life.

"To visit him in his retirement at the research farm was to find him wearing a battered felt hat, a bird's feather stuck in the hatband, dressed in execrable old clothes, and carrying his four-score years very lightly. He was usually engaged in some manual labour about the farm. He took a keen interest in the common domestic animals there, having a name for each and studying its character very intently. Like most great men he was sympathetic in his understanding and put the most self-conscious person at ease by his natural and simple manner. He was a very kindly man. His brain was clear until the end of his life. His clean-cut features and piercing gaze marked the incisive brilliance of his insight into simple commonplace things, and his conversation sparkled whether the topic was highly scientific or concerned the homely things of everyday life. His general knowledge was profound and his memory encyclopædic. His life was active and full until the end. He remained a trustee of the Hunterian collection and continued to write; his last book is now in the press.

"Few of his contemporaries survive, but a wide circle of a younger generation, influenced by his reputation and charmed by his great personality, will deeply regret his passing."

CHARLOTTE RHODA BROWN
M.D. Brux., L.R.C.P.E.

Dr. Charlotte Brown, who died in hospital at Banbury on Jan. 1 at the age of 86, was one of the early band of women who qualified in medicine under difficulties and despite some opposition.

She was a daughter of William Hodgins, of Cloughjordan House, co. Tipperary, and she never lost the interest in natural history which was bred in her as a girl in rural Ireland, in a house with a large garden. She qualified from the London School of Medicine in 1895, taking her Brussels doctorate the following year. After holding several appointments she settled in general practice in Bradford, where she was the only woman doctor, until her marriage in 1901 to the Rev. Richard Brown. Before the 1914–18 war she did much for the woman's suffrage movement, and all her life she was eager to share in any public work in which women took a part.

In 1916, she joined the staff of the East Anglian Sanatorium at Nayland, and specialised in tuberculosis. The following year she was appointed tuberculosis medical officer to the Essex County Council. Later she became medical superintendent of the children's hospital for surgical tuberculosis at High Beech in Epping Forest. She remained at High Beech, combining the post with a child-welfare appointment, until her retirement from practice in 1932. She and her husband then went to live in Welwyn Garden City, where they took a very real, though not a vocal, interest in the activities of the neighbourhood.

A colleague writes: "Dr. Brown was a lovable woman with a large circle of friends in Welwyn. She had a good sense of humour, and would tell many stories against herself. She was excellent company, and her Irish background—the background of the Somerville and Ross *Irish R.M.* stories—gave her an endless fund of anecdote and reminiscence, always very much to the point, well polished with Irish wit and charm, and always kindly and tactful."

Appointments

FAIRLAMB, A. H., M.B. Durh., D.P.H.: senior asst. M.O., Derbyshire.
PEDLER, C. M. H., M.B. Lond.: junior pathologist, Institute of Ophthalmology, London.
SCHOFIELD, P. B., M.R.C.S.: asst. pathologist, Institute of Ophthalmology, London.
SEQUEIRA, P. J. L., M.B. Lond.: S.H.M.O. in pathology, V.D. department, Royal Free Hospital, London.

Manchester Regional Hospital Board:

FERGUSON, HAROLD, M.B. Edin., D.M.R.D.: asst. radiologist, Blackburn and district hospitals.
FREEMAN, GRANVILLE, M.A., B.M. Oxfd, D.L.O., F.R.C.S.: part-time consultant E.N.T. surgeon, Lancaster and Kendal hospitals.
HALL, G. J. H. L., M.B. Glasg., D.P.H., D.C.H.: asst. physician (infectious diseases), Ladywell Hospital, Salford and Astley Hospital, Wigan.
KILPATRICK, ALEXANDER, L.R.C.P.E., D.A.: asst. anæsthetist, Lancaster and Kendal hospitals.
ROBINSON, FRANK, M.B. Manc., F.R.C.S.: consultant plastic surgeon, south Manchester hospitals.
WADDINGTON, G. H., M.R.C.S., D.M.R.D.: asst. radiologist, Lancaster and Kendal hospitals.
WOODCOCK, R. C., M.B. Leeds, D.C.P.: consultant pathologist, Bolton and district hospitals.

Colonial Medical Service:

BANNERMAN, E. W. Q., M.B. Edin.: P.M.O., Gold Coast.
BRANCH, P. W. W., M.B. Lond.: M.O., Barbados.
CHARLES, R. M. F., L.R.C.P.E., D.P.H.: M.O., Trinidad.
FINLAYSON, J. D., M.B.: M.O., Sarawak.
GRAHAM-CUMMING, GEORGE, M.B. Edin., D.P.H.: D.D.M.S., Hong-Kong.
HARRIS, F. C., M.R.C.S., D.C.P.: pathologist, ministry of health, Gold Coast.
HOGG, J. S., M.B. Glasg., F.R.F.P.S.: S.M.O., Gilbert and Ellice Islands.
HUNTER, JAMES, M.B. Dubl.: M.O., Tanganyika.
MURPHY, W. J. D., M.B. Belf.: M.O., Tanganyika.
NOBBS, N. A., M.R.C.S.: asst. tuberculosis officer, British Guiana.
SMART, E. B., M.B., F.R.F.P.S., D.P.H.: specialist, Hong-Kong.
WEBB, R. A. J., M.B. Lond.: M.O., St. Vincent.

Notes and News

CLASSIFICATION OF PROPRIETARY MEDICINES

THE classification of proprietary preparations which has been undertaken by the Joint Committee on Prescribing is to be continued by a standing joint committee of the Health Services Councils. A revised edition of the booklet giving lists of preparations classified in categories 1, 5, and 6 has been printed and is being distributed to doctors and chemists as a guide to prescription under the National Health Service. It replaces the lists issued in July, 1953, and in January, 1954.

REMUNERATION OF HOUSE-OFFICERS

THE Medical Whitley Council (Committee B) have agreed that all fully registered house-officers shall be paid at what is at present the rate for the third house post—namely, £525 per annum. They have also agreed that provisionally registered house-officers shall be paid at the rate for the second house post (£475) instead of that for the first house post (£425) if they have had suitable experience, outside the National Health Service, equivalent to a first house post in the service.

FOOT FAULTS

ON Dec. 20 Mr. W. Sayle-Creer showed to the general-practice section of Manchester Medical Society a film on *Foot Faults Related to Form and Function*. This, he said, dealt with aching and tiredness associated with muscle fatigue due to over-use. The film included evidence supporting the view that the ligaments of the foot were of paramount importance, the muscles having a subordinate rôle. This was the traditional English view, which went out of fashion when Sherrington showed the importance of reflex muscle action. It used to be said that ballet dancers' feet went flat when they stood in the relaxed position and their muscles were relaxed. Two ballet dancers were shown, and it was evident that their feet never went flat but merely looked flat owing to the ballet shoes. The feet of six babies varying in age from 14 days down to 12 hours showed well-formed arches, in contradistinction to the previously held opinion that at birth babies had flat feet, the arch coming into being only by the action of the muscles in the early stages of walking.

The lateral stability of the foot depended on the width and integrity of the forefoot, and it was impaired by narrowness of the foot or incompetence of the first metatarsal segment. A strong foot could be likened to a pair of roller-skates, calling for minimal muscular control; a defective foot resembled an ice-skate, requiring maximal muscular control to stop inversion or eversion. It was this overwork and early fatigue of the muscles that accounted for the symptoms. A keen eye and a critical mind was required in order to assess the foot; the standard of normality must be exacting, for it was the minor deviations from the normal that had caused confusion. When the minor degrees were recognised the cause of the symptoms was obvious. Mr. Sayle-Creer ended with a plea for greater care of the feet of children, because most babies were born with healthy feet.

ARTIFICIAL PHOTOSYNTHESIS

Dr. Daniel J. Arnon, professor of plant physiology in the University of California, announced on Dec. 29, at the annual meeting of the American Association for the Advancement of Science, that the process of photosynthesis had been successfully duplicated outside the living plant.[1] He and his associates, after six years' research, had shown that the pigment-containing chloroplasts of green plants could convert carbon dioxide into sugar even when they were removed from the plants' cells. Radioactive substances were employed to determine the intermediate stages of this process. A new reaction—"photosynthetic phosphorylation"—had been discovered; and three catalysts of the reaction had been identified as riboflavine, ascorbic acid, and vitamin K.

NUFFIELD ORTHOPÆDIC CENTRE

ON Jan. 4 portraits were unveiled of the two men who collaborated to found the centre. Mr. A. H. Smith, the vice-chancellor of Oxford University, unveiled a portrait of the late G. R. Girdlestone. Sir Robert McCarrison, chairman of the university's medical postgraduate committee, described how Girdlestone's orthopædic work was carried out in huts till Lord Nuffield provided money to rebuild the hospital and it was reopened in 1933 as the Wingfield-Morris Orthopædic Hospital. Prof. J. Trueta, in unveiling a portrait of Lord Nuffield, said that the two men were different in temperament and ideals, but between them they had made the hospital what it was today.

The portrait of Lord Nuffield, by John Whalley, has been presented by Lady Nuffield. Mr. Girdlestone's portrait, painted (from a photograph) by Frank Eastman, has been given by old patients and friends.

1. *New York Times*, Dec. 30, 1954.

CIVILIAN CASUALTIES IN WAR

THE North West Metropolitan Regional Hospital Board and the Middlesex County Council have lately made a joint study of problems concerning civilian casualties in war. The first-aid services would operate under the control of the Civil Defence commissioners and controllers, and usually medical officers of health would discharge this duty on their behalf. Trained nurses and nursing auxiliaries of the National Hospital Service Reserve would be employed in their parent hospitals until called out after an attack. The doctors of the mobile first-aid units would be general practitioners, who would train their teams beforehand. The functioning of the casualty-transit centres and of the cushion and the base hospitals, with their centres for special cases, was described. Coördination of plans for managing and treating patients was declared to be essential, since life-saving and limb-saving treatment alone would be practised close to the time and to the place of injury, while the continuing treatment for restoration of function would be applied in base hospitals in distant areas all over the country. It was conceded that the disposition of hospitals as now planned might have to be altered in the face of a threat of more powerful weapons of attack; but it was considered that the principles of employment of first-aid, ambulance, and hospital services would remain unchanged. This study was arranged by a directing staff, under the chairmanship of Sir Ernest Rock Carling.

Order of St. John of Jerusalem

The Queen has sanctioned the following promotions in, and appointments to, this Order.

As Knights.—Brigadier R. A. Hepple, C.B.E., M.C., M.B., W. P. Warner, C.B.E., D.S.C.

As Commanders.—Air Commodore A. A. G. Corbet, M.D., Brigadier K. A. Hunter, O.B.E., M.D., S. H. Keshen, M.D., Surgeon Captain E. H. Lee, M.D., A. P. Gorham, M.B., E. M. Dearn, M.B., R. A. P. Gray, M.B., K. G. W. Saunders, O.B.E., F.R.C.S., Lieut.-Colonel G. N. Morris, F.R.C.S., Lieut. Colonel F. K. Mugford, M.B., R. R. Trail, C.B.E., M.C., F.R.C.P.

As Officers.—Lieut.-Colonel Stephen Mackenzie, O.B.E., M.R.C.S., J. S. Grant, F.R.C.S., Robert Scott Reid, M.B.E., M.B., R. A. Dench, M.C., M.B., Joseph Morris, M.B., Lieut.-Colonel J. A. Melanson, M.B., Francis O'Daly, M.B., J. A. White, F.R.C.S., J. C. Moor, M.B., Lieut.-Colonel W. B. Everatt, T.D., M.B., J. C. Cassagiia, L.R.C.P.E., Prof. Joseph Galea, M.B.E., M.D., Colonel G. A. Winfield, O.B.E., M.D., G. D. E. Tullis, M.B., V. C. J. Harris, F.R.C.S., A. H. Penistan, M.B., E. F. Brown, M.R.C.P., E. L. Butler, M.B., M. Y. Paget, M.R.C.S., G. E. Mullins, M.B., Robert Dick, M.B., Major M. J. Bett, M.D., A. L. Buchanan, M.B., F.R.C.S., R. M. B. MacKenna, F.R.C.P., H. G. Wiltshire, M.B., L. J. Haydon, T.D., M.B., H. E. Offord, M.B., J. Ripley Oddie, M.B., J. Trefor Watkins, M.B., J. H. Dixon, M.B., R. H. Percival, F.R.C.S., J. J. Kennedy, M.B., V. C. Meyer, M.B., G. E. G. Peirce, F.R.C.S., J. McC. Caldwell, M.B., H. E. W. Roberton, M.D.

St. George's Hospital Medical School

Postgraduate demonstrations in neurology and psychiatry are being held at the hospital on Thursdays, at 5 P.M. during the Lent term. They are open, without fees, to all doctors and senior medical students.

Chartered Society of "Queen Square"

The council of this society will shortly hold an election for vacant pensions (£20 per annum) to "needy sufferers from incurable nervous diseases." Forms of application may be had from the secretary of the society, Queen Square House, London, W.C.1.

Oxford Graduates Medical Club

The winter dinner of this club is to be held on Friday, Feb. 11, at 7.30 P.M. at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2. Prof. H. R. Dean will be in the chair. Tickets (25*s.*) may be had from the secretary, Mr. Selwyn Taylor, 3, Roedean Crescent, Roehampton, S.W.15.

Liverpool University Medical Students' Society

This society's annual dinner will be held at the Bluecoat Hall, Bluecoat Chambers, on Thursday, Feb. 3, at 7.30 P.M. The guest of honour will be Mr. Arthur Gemmell, P.R.C.O.G. Tickets (21*s.*) may be had from H. Dinnick, Medical School, Liverpool University.

Fellowships in Clinical Research

The Medical Research Council invite applications for a further series of fellowships in clinical research, tenable at centres in the United Kingdom during the academic year 1955–56. These fellowships are open to suitably qualified medical graduates who desire to prepare themselves for a career in clinical research. In general, it is intended that each fellow appointed under the scheme should be given an opportunity, as part of his training for clinical research, to study methods of research in the basic subject most relevant to his particular clinical interest.

The awards will be made for one year in the first instance and will be renewable annually in approved cases up to a maximum of three years in all. Stipend will be at the rate of £856 per annum, rising by annual increments of £75 to £1000 per annum, with superannuation provision in addition.

Candidates for these fellowships, which are ordinarily restricted to British subjects resident in the United Kingdom, must be medically qualified and clinically experienced, and should preferably have worked for a period in a department in which clinical research was in progress. Applicants will be invited to submit their own proposals as to type and place of work, but the Council will be glad to advise successful candidates on the selection of suitable centres of study and to assist in placing them in departments or laboratories where the desired training and experience can be obtained.

Applications must be sponsored in each case by the head of the appropriate department in the candidate's university or medical school, and an undertaking will be required that a suitable academic post in a clinical department will be available to the candidate in that institution on satisfactory completion of the period of study under the fellowship.

Forms of application may be obtained from the Secretary, Medical Research Council, 38, Old Queen Street, London, S.W.1, with whom applications should be lodged not later than March 1.

Anglo-French Exchange Bursaries

Short-term grants for work in France are offered again this year to British doctors and medical research-workers by the Institut National d'Hygiène, Paris. Details can be had from Dr. G. W. Wolstenholme, Ciba Foundation, 41, Portland Place, London, W.1. The closing date for applications is Feb. 5.

Mental-health Campaign in Edinburgh

In February a campaign is to be staged in Edinburgh, with the aims of educating the public about the nature of mental illness and of recruiting nurses for mental hospitals. This campaign is being organised with the help of representatives of the hospitals concerned, the churches, voluntary bodies, the South-Eastern Regional Hospital Board, the Ministry of Labour, the Department of Health for Scotland, the Scottish Information Office, the General Board of Control, and the Scottish Association for Mental Health.

Mr. B. W. Rycroft has been invited to become an honorary member of the Ophthalmological Society of South Africa.

The Association of Universities of the British Commonwealth (36, Gordon Square, London, W.C.1) have published a list of awards for advanced study and research including fellowships, scholarships, and grants. The list will appear as appendices II and III of the *Commonwealth Universities Yearbook*, 1955.

A reference list of publications and organisations concerned with cell and tissue preservation has been compiled by the Glycerine Producers' Association (295, Madison Avenue, New York, 17, N.Y., U.S.A.), from which copies may be had.

CORRIGENDUM: *Diagnosis of Pericardial Effusion.*—In our annotation of Jan. 8, the last paragraph should have begun: "Although pericardial effusion causing tamponade is uncommon . . ."

Diary of the Week

JAN. 16 TO 22

Monday, 17th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. Macdonald Critchley: Parietal Symptomatology.

HUNTERIAN SOCIETY
8.30 P.M. (Mansion House, E.C.4.) Prof. Jack Adams-Ray (Stockholm): New Symptom Pallor—in the Inflammation-syndrome.

Tuesday, 18th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Prof. G. M. Bull: The Uræmias. (First Goulstonian lecture).

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Douglas McClean: Substances that increase Tissue Permeability and their Relation to Infection and Fertilisation.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Dr. G. W. B. James: Neurosis in Gynæcology.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. M. S. Thomson: Tuberculosis Cutis.

SOCIETY FOR THE STUDY OF ADDICTION TO ALCOHOL AND OTHER DRUGS
8 P.M. (11, Chandos Street, W.1.) Dr. M. M. Glatt: Treatment Centre for Alcohol Patients at a State Mental Hospital.

SOUTH WEST LONDON MEDICAL SOCIETY
8.30 P.M. (Bolingbroke Hospital, Wandsworth Common, S.W.11.) Dr. Francis Camps: Forensic Medicine and the Law.

Wednesday, 19th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8.15 P.M. *General Practice.* Dr. A. Talbot Rogers, Dr. F. S. Cooksey: Rehabilitation of the Housewife.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Henry Haber: Eosinophilic Granulomas of the Skin.

EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Prof. L. S. Penrose, F.R.S.: Genetics of Microcythæmia (Thalassæmia).

OXFORD UNIVERSITY
5 P.M. (Radcliffe Infirmary.) Dr. John Bowlby: Maternal Care and Mental Health.

MIDLAND MEDICAL SOCIETY
8.15 P.M. (Birmingham Medical Institute, 154, Great Charles Street, Birmingham, 3.) Sir Stanford Cade: Progress in the Treatment of Cancer.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow, C.2.
5 P.M. Prof. W. W. Mushin: Physiological Principles in the Care of the Unconscious Patient. (John Burns lecture.)

Thursday, 20th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Professor Bull: The Uræmias. (Second of two Goulstonian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.2
5 P.M. Prof. Arnold Sorsby: Ocular Infections.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. D. G. Melrose: Cooling of the Whole Organism.

ROYAL ARMY MEDICAL COLLEGE, Millbank, London, S.W.1
5 P.M. Mr. C. Naunton Morgan: Advances in Surgery in Diseases of the Colon and Rectum.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Dr. A. H. E. Marshall: Actions of Hormones and Pharmacological Agents upon the Acute Skin Damage produced by X Rays and Carcinogenic Hydrocarbons. Dr. L. E. Houghton, Dr. J. B. Walter, Mr. D. E. A. Jones, F.INST.P.: Modification of X-ray Damage by Cortisone. Dr. Karol Sicher: Clinical Trial of A.C.T.H. in Radiotherapy.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26 Portland Place, W.1
7.30 P.M. Prof. R. M. Gordon, Mr. W. Crewe, Mr. H. Oldroyd, Dr. B. O. L. Luke, Prof. J. J. C. Buckley, Sir Philip Manson-Bahr, Dr. Frank Hawking, Dr. W. E. Kershaw: Loiasis.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY
8.30 P.M. (Clarendon Restaurant, Hammersmith Broadway, W.6.) Dr. Dudley Hart, Dr. C. J. M. Clark (for); Dr. Oswald Savage, Dr. J. H. H. Glyn (against): That Money spent on Research into Rheumatism has been wasted.

OSLER CLUB
7.45 P.M. (11, Chandos Street, W.1.) Colonel L. W. Harrison: Neisser and Neisserian Principles in Venereology. Dr. David Nabarro: Decline and Fall of Congenital Syphilis.

UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee
5 P.M. Prof. R. E. Tunbridge: Problems of Diabetes Mellitus.

Friday, 21st

POSTGRADUATE MEDICAL SCHOOL OF LONDON
4 P.M. Sir Geoffrey Todd: Problems of Tuberculous Effusions.

ROYAL SOCIETY OF MEDICINE
5 P.M. *Epidemiology and Preventive Medicine.* Dr. A. H. Gale, Dr. A. P. Goffe: Geographical Distribution of Poliomyelitis.
8.15 P.M. *Radiology.* Dr. Claude Taylor, Dr. G. D. Matthew, Dr. G. W. Bloomfield: Functioning Ovarian Tumours and other Unusual Growths of the Ovary.

FACULTY OF RADIOLOGISTS
5 P.M. (Royal College of Surgeons of England.) *Radiotherapy.* Mr. George Scott, Dr. J. R. Nuttall: Cancer of the Larynx.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. G. B. Mitchell-Heggs: Chronic Granulomas.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh, 1
8 P.M. Prof. D. M. Dunlop: Cortisone in Practical Therapy.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW
5 P.M. Mr. W. S. Mack: Surgery of the Bladder and Prostate.

Saturday, 22nd

BRITISH ASSOCIATION OF ALLERGISTS
11 A.M. (1, Wimpole Street, W.1.) Papers.

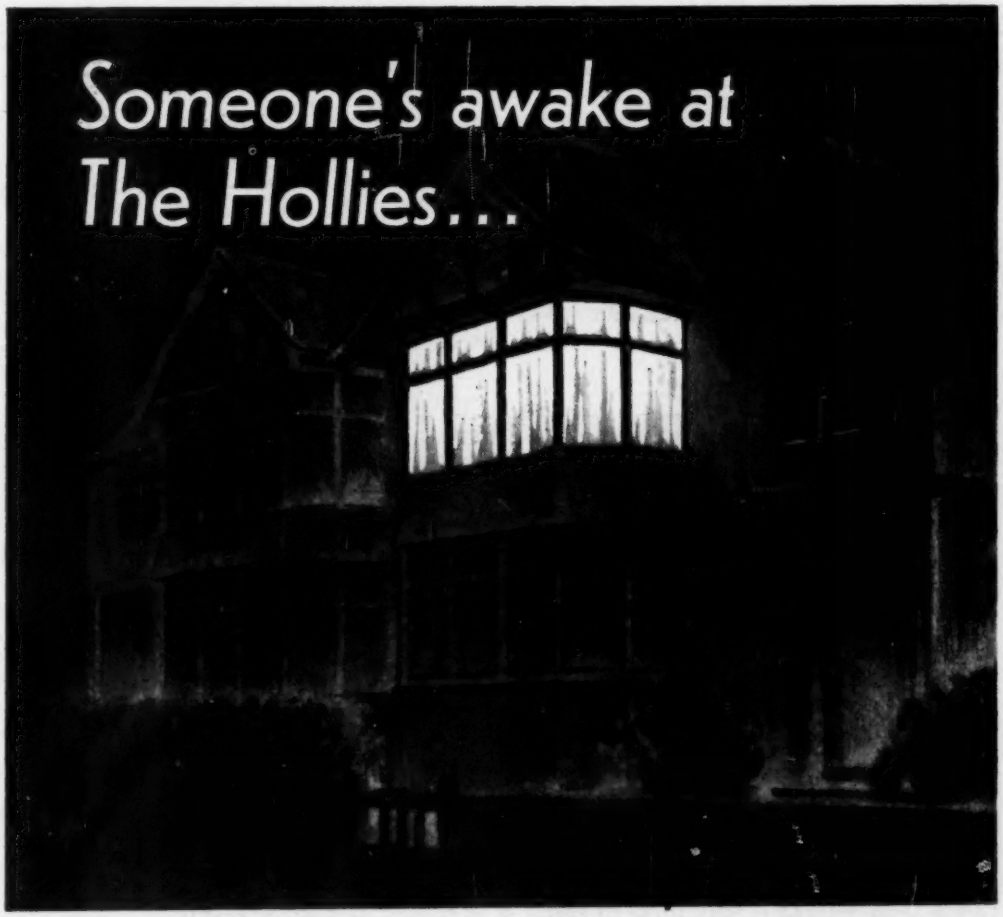
Births, Marriages, and Deaths

BIRTHS

WARREN BROWNE.—On Jan. 8, at King's College Hospital, to Murie James, M.B. Edin., wife of Dr. D. Warren Browne, of Cowes I.O.W.—a daughter.

DEATHS

WHITE.—On Jan. 6, at Sutton, Surrey, Robert George White, M.A., M.B., B.SC., in his 80th year.



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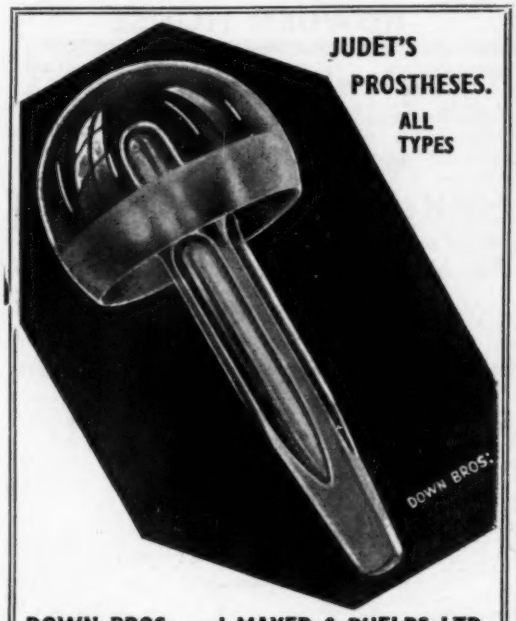

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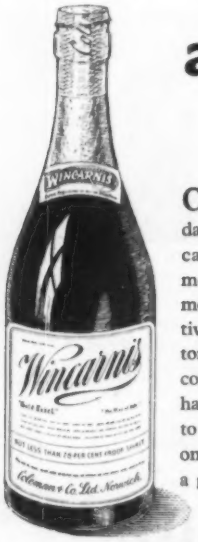

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS

SALTWELL RESEARCH FUND

Applications are invited for a SALTWELL RESEARCH FELLOWSHIP value not less than £1000 a year with superannuation arrangements. The Fellowship is for a period of 1 year, renewable up to a total period of 3 years. Under the terms of the Fund the Fellow appointed must engage in research work of any type, including clinical epidemiological or laboratory studies in connection with cancer, rheumatism, malaria or morbid conditions of the prostate gland.

Applications accompanied by the names of 3 referees should state details of the proposed work, under whom it is proposed to undertake the work and the name of the institution where the work is to take place. A grant for reasonable expenses may be paid to the institution concerned.

Further details may be obtained from the Secretary of the Trustees, the Assistant Registrar, Royal College of Physicians, Pall Mall East, London, S.W.1, by whom applications for a Fellowship must be received not later than 1st April, 1955.

THE UNIVERSITY OF LEEDS

PART-TIME COURSE FOR THE DIPLOMA IN PUBLIC HEALTH

A Course for the Diploma in Public Health will commence in OCTOBER, 1955, if sufficient entries are received. Instruction will be part-time and will occupy 5 academic terms. Students will require to spend 2½ days a week in each term in whole-time study, leaving the remainder of the time free for approved gainful employment. Candidates holding part-time Public Health appointments or with previous whole-time Public Health service may be granted exemption from some of the practical Public Health work, so reducing the whole-time study to approximately 2 days a week.

Candidates are asked to apply as soon as possible to the Sub-Dean, School of Medicine, Thoresby-place, Leeds, 2.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY R.C.P. AND S.ENG.

A COURSE OF INSTRUCTION IN RADIOTHERAPY will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 4TH APRIL, 1955. This will continue until the end of January, 1956, after which students must still spend a further 15 months working either in the Holt Radium Institute or in another approved hospital. Inclusive fee £52. There may be appointments under the National Health Service at Senior House Officer or Registrar level for successful candidates. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery. Further information may be obtained from the Director, Holt Radium Institute, Wilmslow-road, Manchester, 20.

Applications must be sent to the Dean of Postgraduate Medical Studies, University of Manchester, not later than Monday, 21st February, 1955. All applicants will be required to attend for interview.

BRITISH POSTGRADUATE MEDICAL FEDERATION AND EMPIRE RHEUMATISM COUNCIL

DEMONSTRATIONS for Consultants on MODERN ASPECTS OF RHEUMATIC DISEASE will be held at The Arthur Stanley Institute, Middlesex Hospital, and The Postgraduate Medical School, London. 24TH–26TH MARCH, 1955.

The programme will include lectures, demonstrations, and discussions on modern methods of investigation and treatment.

The course will be limited to 40 persons. No fees. Closing date for application 1st February, 1955.

Application for places and detailed programme from the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

THE NUFFIELD FOUNDATION

FELLOWSHIPS AND SCHOLARSHIPS IN DENTISTRY

The Nuffield Foundation invites applications, from citizens of the United Kingdom, for Fellowships and Scholarships in Dentistry. To help the advancement of teaching and research on dental health and disease, the Foundation is prepared to award a number of Fellowships :

(i) to enable selected men and women with dental qualifications to receive such additional training in pure and applied science as is desirable to fit them for an academic career in dentistry (but not to obtain a medical qualification), and ;

(ii) to enable selected university graduates in medicine and science to receive training that will qualify them to undertake teaching and fundamental research on dental health and disease.

The Foundation is also prepared to award a limited number of Scholarships to assist students of outstanding ability attending a university dental school to devote 1 or 2 years to further studies of the basic sciences.

Applications for Fellowships should be received by 1st March annually and for Scholarships by 30th June annually. Copies of the conditions of both Fellowships and Scholarships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

THE NUFFIELD FOUNDATION

MEDICAL FELLOWSHIPS

As part of its programme for the advancement of health, the Nuffield Foundation is prepared to award a number of Fellowships to highly qualified Men and Women of the United Kingdom, usually between the ages of 25 and 35, who wish to train further for teaching and research appointments in any branch of medicine.

Applications for awards in 1955 must be received not later than 1st May, 1955. The conditions of these Fellowships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

COURSE IN ADVANCED ORTHOPÆDICS

at the

INSTITUTE OF ORTHOPÆDICS

28TH MARCH–1ST APRIL, 1955

Monday, 28th March, Town Section, 234, Great Portland-street, W.1. (Lecture Room)

10.40 A.M.–12.40 P.M. Scoliosis .. .. .. Mr. J. I. P. JAMES

2.00 P.M.–3.00 P.M. Bacteriological Aspects of Joint Tuberculosis Dr. C. H. LACK

3.00 P.M.–4.00 P.M. Volkmann's Contracture Mr. H. J SEDDON

Tuesday, 29th March, Town Section

10.15 A.M.–11.15 A.M. Metabolic Disorders of Bone Dr. R. NASSIM

11.30 A.M.–12.40 P.M. Pain Down the Arm Dr. P. F. SANDIFER

2.00 P.M.–4.00 P.M. Medical Aspects of Tuberculosis Joint Dr. F. H. STEVENSON

Wednesday, 30th March, Town Section

9.45 A.M.–10.45 A.M. Bone Repair .. .. .. Dr. H. A. SISSONS

11.00 A.M.–12.40 P.M. Peripheral Vascular Disorders Mr. G. L. W. BONNEY

2.00 P.M.–3.00 P.M. Biochemistry in Orthopædics Dr. P. G. WALKER

3.00 P.M.–4.00 P.M. Slipped Femoral Epiphyses Mr. H. J. BURROWS

Thursday, 31st March, Country Section, Brockley Hill, Stanmore, Middlesex (Hut 5)

10.30 A.M.–12.40 P.M. General Clinical Demonstration Mr. D. TREVOR

1.45 P.M.–2.45 P.M. Spondylolisthesis .. .. Mr. P. H. NEWMAN

2.45 P.M.–4.30 P.M. The Early Treatment of Paralysis in Poliomyelitis Mr. D. M. BROOKS

Friday, 1st April, Country Section

10.30 A.M.–12.40 P.M. General Clinical Demonstration Mr. K. I. NISSEN

2.00 P.M.–3.00 P.M. Plaster of Paris Technique Mr. E. L. TRICKEY

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean at the Town Section.

UNIVERSITY OF DURHAM. THE MEDICAL SCHOOL, KING'S COLLEGE, NEWCASTLE UPON TYNE. The Council of King's College invite applications for the post of FIRST ASSISTANT in the Department of Medicine. The appointment will be for a period of 1 year in the first instance, but renewable up to a maximum of 3 years. The initial salary will be £1200, rising, if the appointment is renewed, to a maximum of £1700 in the third year. Family allowance and F.S.S.U.

Applications (12 copies), together with the names and addresses of 3 persons to whom reference may be made, should be submitted not later than Monday, 31st January, to the undersigned, from whom further particulars may be obtained.

G. R. HANSON, Registrar of King's College.

THE UNIVERSITY OF LEEDS. Department of Psychiatry. Applications are invited from suitably qualified registered medical Men or Women for the newly-instituted post of either SENIOR LECTURER or LECTURER IN CHILD PSYCHIATRY. The salary scales are under review but it is expected that they will be such as to enable an appointment to be made within the range £1150–£1750 a year for a Lecturer or £1850–£2400 a year for a Senior Lecturer, according to qualifications and experience. In addition to teaching and research work, the successful candidate will undertake work in the Child Guidance Clinic run by the Department, and in the Child Guidance Service of the County Council of the West Riding. The appointment will be effective as soon as may be arranged.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 7th March, 1955.

THE UNIVERSITY OF LEEDS. Applications are invited for IMPERIAL CHEMICAL INDUSTRIES LIMITED RESEARCH FELLOWSHIPS in Bacteriology, Biochemistry, Biomolecular Structure, Botany (Plant Biochemistry and Biophysics), Chemical Engineering, Chemistry, Chemistry of Leather Manufacture, Chemotherapy, Colour Chemistry and Dyeing, Engineering (Civil, Electrical or Mechanical), Fuel and Refractories, Geology (including Geochemistry), Metallurgy, Mining (Selective Flotation and Geophysical Surveying), Pharmacology, Physics, Physiology or Textile Industries (Protein Chemistry and Wool Textile Engineering). The Fellowships will be of an annual value within the range £600–£900 a year according to qualifications and experience and will normally be tenable for 3 years. Further particulars can be obtained on request.

Applications (3 copies; 1 in the case of applicants from overseas), together with the names of 2 referees, should reach the Registrar, The University, Leeds, 2, not later than 15th April, 1955.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country for the post of LECTURER IN OPHTHALMOLOGY. The successful candidate will be expected to carry out research in the University Department of Ophthalmology at the Manchester Royal Eye Hospital and to assist in the clinical work of this unit. Salary on a scale rising to £1800 p.a. (salary scales at present under review), with membership of F.S.S.U. and Children's Allowance Scheme : initial salary according to qualifications and experience.

Applications should be sent not later than 5th February, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country, for the post of ASSISTANT LECTURER or DEMONSTRATOR IN PATHOLOGY. Previous experience in pathology is not essential. Duties will consist of teaching and of participation in the Morbid Anatomy Service of Manchester Royal Infirmary. Opportunities will be available for research. Salary of Assistant Lecturer on a scale £700–£1000 p.a., with membership of F.S.S.U. and Children's Allowance Scheme; initial salary according to qualifications and experience. Salary of Demonstrator £700 p.a. with membership of Children's Allowance Scheme. Salary scales at present under review.

Applications should be sent not later than 26th February, 1955, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3. Applications are invited for the post of RESEARCH ASSISTANT in Department of Physiology. This post is intended to give medically qualified persons opportunities to become familiar with physiological techniques in the investigation of respiratory disorders and to assist in research in this field. The appointment will be for a period of 1 year, at a salary of £700.

Further information can be obtained from the Dean, to whom applications should be sent before 7th February.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL. A LECTURER IN APPLIED PHARMACOLOGY AND THERAPEUTICS is required by the Department of Therapeutics. Salary will be according to the scale for a Junior Lecturer or Lecturer according to experience, with family allowance.

Applications, giving full particulars and the names of 2 referees, should be sent, before 8th February, to the Dean, St. Thomas's Hospital Medical School, London, S.E.1.

THE LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON). Applications are invited for the post of DEMONSTRATOR IN PHYSIOLOGY which will shortly become vacant. Initial salary, within scale £600–£750, will be dependent on qualifications and experience. (This scale is subject to alteration under the revised salary scales.) The successful candidate will be eligible for membership of the F.S.S.U. and family allowances of £50 p.a. for each child.

Applications (3 copies), together with the names of 2 referees, must be received by the Secretary, The London Hospital Medical College, Turner-street, E.1, within 14 days of the appearance of this advertisement.

UNIVERSITY OF NATAL, South Africa. Applications are invited from suitably qualified persons for appointment to the following posts on the staff of the Medical School at Durban:—

(*a*) SENIOR LECTURER IN GYNÆCOLOGY AND OBSTETRICS.

(*b*) SENIOR LECTURER IN SURGERY.

The salary scale attached to each of the posts will be £1400–£50–£2000 p.a., plus a temporary cost-of-living allowance of £234 p.a. payable to married men only. The appointment will be made jointly by the University and the Natal Provincial Administration, and membership of the University Institutions' Provident Fund will be compulsory, contributions being at the rate of 7% of basic salary. It is most desirable that the persons appointed should assume duty on 1st April, 1955, or as soon as possible thereafter.

Further particulars and information as to the method of application should be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications in South Africa and London, is 15th February, 1955.

UNIVERSITY OF SYDNEY, Australia. The Senate will shortly proceed to an appointment to the CHAIR OF ANATOMY. Salary will be at the rate of £A2500 p.a. There is a normal retirement provision under the Professorial Superannuation Scheme, and, in addition, a pension of not less than £A400 p.a. upon retirement after the age of 60 years. Finance available for home purchase under Staff Members' Housing Scheme. The Senate reserves the right to fill the Chair by invitation.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 1st March, 1955.

UNIVERSITY OF SYDNEY, Australia. Applications are invited for the position of LECTURER/SENIOR LECTURER IN BACTERIOLOGY. Applicants with experience in dental bacteriology will be preferred. The salary for a Lecturer is within the range of £A1100–£A1450 p.a., for a Senior Lecturer £A1500–£A1750 p.a., with annual increments of £A50. The salary is subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful applicant. Finance available for home purchase under Staff Members' Housing Scheme.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 26th February, 1955.

Hospital Services: Senior Appointments

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the full-time appointment of an ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer grade). Salary £1500 at age of 32. Candidates must hold a Diploma in Medical Radiology.

Applications (12 copies), quoting age, education, qualifications and experience, and giving the names of 3 referees, should be sent to the undersigned by 14th February, 1955.

J. D. BANKS, House Governor.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) Full-time CONSULTANT PATHOLOGIST, Group Laboratory, Mile End Hospital, E.1. Experience in morbid anatomy essential and in hæmatology desirable.

(2) Part-time CONSULTANT PHYSICIAN in Physical Medicine, Queen Mary's Hospital for the East End, E.15 (3 sessions a week), St. Mary's Hospital, Plaistow, E.13 (1 session a week). Joint appointment.

Applications (6 copies) and names of 3 referees should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 29th January 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a superannuable post of ASSISTANT SENIOR MEDICAL OFFICER at a salary of £1550–£75(4)–£100(1)–£1950. The successful applicant will be required to undertake duties under the direction of the Senior Administrative Medical Officer. Experience in general medical administration is essential.

Applications, giving particulars of qualifications and experience, together with the names of 3 referees, should be addressed to the Senior Administrative Medical Officer, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, by 31st January, 1955. Envelopes should be marked "A.S.M.O."

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from Fellows of a Royal College of Surgeons to fill 9 notional half-day consultant sessions a week in Thoracic Surgery. The work includes tuberculous and non-tuberculous surgery and consultative clinics. 1 or more appointments may be made within the total number of sessions. The main hospitals concerned are the Brook Hospital, Shooters Hill, Woolwich, S.E.18, where the Regional Thoracic Surgical Unit is situated and Grove Park Tuberculosis Hospital, Marvels-lane, Lee, S.E.12. The hospitals may be visited.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, and the number of sessions for which available, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 29th January, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Maximum Part-time CONSULTANT NEUROSURGEON for new unit at Preston Royal Infirmary. Appointee in addition to organise head injury service in northern part of Region and to undertake psychosurgery at 2 large mental hospitals. Must live near Preston. Wide experience essential. 24th January, 1955.

(*b*) Maximum Part-time CONSULTANT THORACIC SURGEON to serve northern part of Region, based on Victoria Hospital, Blackpool (Non-tuberculous and Cardiac Unit), High Carley Sanatorium, near Ulverston, and Wrightington Hospital (tuberculous), near Wigan. Wide experience essential. Must reside within reasonable distance of Blackpool. 27th January, 1955.

(*c*) Maximum Part-time CONSULTANT GROUP ANÆSTHETIST to organise and coördinate services in North and Mid-Cheshire Hospitals, based on Altrincham General Hospital, near Manchester, and to reside in vicinity of that Hospital. Wide experience and higher qualifications essential. 14th February, 1955.

(*d*) Whole-time NON-RESIDENT ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer), Baguley Hospital, Manchester (400 Beds). This is the main regional centre for the surgical treatment of pulmonary tuberculosis and previous experience in the management of such cases will be an asset. Further information from Physician-Superintendent. 9th February, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

PLYMOUTH CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a CONSULTANT SENIOR CHEST PHYSICIAN to the Plymouth Clinical Area which comprises Plymouth, Kingsbridge, Tavistock, Launceston, Rude and Liskeard. Applicants should possess high medical qualifications, and have had wide experience in diseases of the chest, non-tuberculous as well as tuberculous. For a period of 3 years the appointment will be held on a whole-time basis; thereafter the terms of the appointment in this respect will be the subject of review. The duties will include the organisation of the Chest Service of the Area with continuing responsibility to ensure that the beds in the Chest Hospitals are used to the best advantage, and clinical work in relation to outpatients and inpatients. The Consultant to be appointed will have an outpatient session at a General Hospital together with charge of beds at 1 or more Chest Hospitals, and may be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time. He will also be required to collaborate with the Medical Officer of Health of the City of Plymouth and the County Medical Officers of Health of Devon and Cornwall in relation to the preventive and aftercare services of these Local Health Authorities.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February, 1955.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT RADIOLOGIST required for approximately 7 notional half-days per week for the Chesterfield Group and 2 per week for the Mansfield Group of hospitals.

Further details and application form from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 5th February, 1955.

BRISTOL. HORTHAM-BRENTRY HOSPITAL GROUP. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a Whole-time CONSULTANT PSYCHIATRIST who will be Medical Superintendent of the Hortham-Brentry Hospital Group Bristol, and will be required to undertake duties in child psychiatry in the Bristol Clinical Area. The Hortham-Brentry Group of hospitals contains approximately 1359 beds for mental defectives. Applicants will be required to undertake the duties of Consultant Psychiatrist and the statutory responsibilities prescribed by the Mental Deficiency Acts and Regulations. A detached house near the Hospital will be available.

Applications (12 copies), stating date of birth, qualifications and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 5th February, 1955.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS AND THE EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT NEUROSURGEON (maximum part-time) to be appointed jointly by the 2 Boards for a new unit in Cambridge and for duties in the Region. The unit, which will contain about 23 beds, will be a department of Addenbrooke's Hospital, and it is hoped that it will be opened during the first half of 1956. The successful candidate will be consulted over the planning of the unit, and it is expected that he will be asked to take up duties some time before the new unit is opened.

Applications (12 copies), stating age, nationality, present and past appointments and publications, with names of 3 referees, to the Secretary, the United Cambridge Hospitals, Addenbrooke's Hospital, Cambridge, by 8th February.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT ANÆSTHETIST (whole-time), Peace Memorial (196 Beds) and Shrodells (427 Beds) Hospitals, Watford. Salary £1500 (unless below 32 years)–£1950.

Applications by 21st February, 1955.

(2) PATHOLOGIST (whole-time), Napsbury Hospital, St. Albans (2138 Beds): for general pathological duties. Experience in neuropathology an advantage. Salary £1500 (unless below 32 years)–£1950.

Applications by 25th February, 1955.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT ANÆSTHETIST based at the Victoria Infirmary, Glasgow, and Hairmyres Hospital, East Kilbride. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT ANÆSTHETIST, based at Law Hospital, Carluke, with duties in other hospitals within the Lanarkshire Area as may be required. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from Female practitioners for an appointment as Whole-time ASSISTANT PATHOLOGIST to the Area Laboratory in the Brighton and Lewes Group of hospitals, with duties mainly at the New Sussex Hospital for Women. Candidates must have had general experience in pathology and possession of a higher qualification is desirable. Salary within the scale £1500–£50–£1950.

Apply, stating nationality, age, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 29th January, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT DIAGNOSTIC RADIOLOGIST (whole-time or 9 half-days per week) for the Portsmouth Group of hospitals. Candidates must possess the Diploma in Diagnostic Radiology.

(2) Maximum Part-time or Whole-time ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer grade) for the West Dorset Group of hospitals. Duties mainly in Dorchester and Weymouth, and the successful candidate will be required to work under the supervision of a Consultant.

(3) CONSULTANT ANÆSTHETIST (5 half-days per week) for the Bournemouth and East Dorset Group of hospitals. Applicants should possess the F.F.A.R.C.S. and should have had experience in thoracic anæsthesia.

Applicants may visit hospitals by local arrangement.

Applications (5 copies), stating age, qualifications, experience, and names of 3 referees, to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester, by 8th February, 1955.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a post as CONSULTANT ANÆSTHETIST to hospitals managed by the Banbridge and Dromore and South Down Hospital Management Committees. The appointment will be on a part-time basis of 7 half-days of duty weekly in the first instance, and the terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 4th February, 1955.

AUSTRALIA. THE ROYAL MELBOURNE HOSPITAL. Applications are invited from locally qualified medical practitioners for the position of ASSISTANT ANÆSTHETIC SPECIALIST to the Department of Anæsthesia. This is a new part-time appointment, at a salary of £1500 p.a., and is non-resident. Applicants must possess a Fellowship of a Faculty of Anæsthetists or its recognised equivalent. Extensive clinical experience in modern anæsthetic methods, particularly in relation to thoracic surgery is essential. Appointment will be initially for 1 year, with option of renewal.

Applications, on the prescribed form obtainable from the undersigned, giving full details of qualifications and anæsthetic experience, will be received until 1st March, 1955. Except in special circumstances, late applications will not be considered.

AFTON MORCOM, Manager.

AUSTRALIA. THE ROYAL MELBOURNE HOSPITAL. Applications are invited for the post of Full-time MEDICAL OFFICER to the Cardiac Clinic at The Royal Melbourne Hospital. The appointment is for 1 year in the first instance, and is renewable. Applicants must hold a senior degree in medicine. They are required to give details of their training in general medicine, and of training in special methods of investigation of cardiac and pulmonary functions, as well as in cardiology. The salary is £2000 p.a.

Applications, on the prescribed form, close with the undersigned on 1st March, 1955. Further information may be obtained on application. AFTON MORCOM, Manager.

Hospital Services : Junior Appointments

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER, commencing on 1st April, 1955, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Applicants should intend to take a full training in psychiatry. Experience in general medicine and neurology or in the basic sciences is an advantage.

Applications, giving details of experience, and the names of 3 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, London, S.E.5.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of REGISTRAR, commencing on 1st April, 1955, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Candidates with experience in general medicine and neurology or in psychology will receive special consideration.

Applications, giving details of experience, and the names of 3 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, London, S.E.5.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR REGISTRAR (first year), commencing on 1st April, 1955, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Candidates should have a higher medical qualification, and experience in psychiatry is essential.

Applications, giving details of experience, and the names of 3 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, London, S.E.5.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Obstetric and Gynæcological Department. Post recognised for D.Obst. R.C.O.G. and M.R.C.O.G. Appointment for 6 months from 21st February, 1955.

Applications, with copies of 2 testimonials, to Medical Director by 22nd January, 1955.

FOREST GATE HOSPITAL, Forest-lane, London, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st March, 1955. The appointment is recognised for the training of candidates for D.Obst.R.C.O.G.

Applications, with names of 2 referees to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 22nd January, 1955.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for the post of MEDICAL REGISTRAR, vacant in February. The appointment will be for 1 year in the first instance. A higher qualification in medicine is desirable. Canvassing will disqualify, but candidates are invited to visit the Hospital.

Forms of application (enclosing stamped addressed envelope) from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed forms should be returned not later than 29th January.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration, and registered medical practitioners for posts of HOUSE SURGEON (2), vacant on 8th and 11th February, 1955. The appointments are for 6 months. Recognised for the F.R.C.S.

Application forms from the Physician-Superintendent enclosing a stamped addressed envelope.

HACKNEY HOSPITAL, London, E.9. (842 Beds.) OBSTETRIC HOUSE SURGEONS required as under :—

(*a*) From 17th February (pre-registration).
(*b*) From 1st April (not pre-registration).

Posts recognised for M.R.C.O.G.

Apply Group Secretary, above address by 19th January.

HIGHLANDS GENERAL HOSPITAL, Winchmore-hill, London, N.21. ORTHOPÆDIC HOUSE SURGEON required. Preference given to applicants seeking pre-registration posts under Medical Act, 1950.

Applications, with copies of 3 testimonials, to Hospital Secretary.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of SENIOR REGISTRAR in Ophthalmology at the Royal Eye Hospital. Applicants should hold a higher surgical qualification and have had previous experience in an ophthalmic post. The appointment, which is subject to the terms and conditions of service for medical and dental staffs, will be tenable until 30th September, 1955, in the first instance, and is subject to reappointment.

Applications, stating age, education, qualifications and experience, with the names of 2 referees, should be sent to the undersigned as soon as possible.

S. W. BARNES, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, London, E.1. (130 Beds.) HOUSE PHYSICIAN (pre-registration or first, second, or third) required for 6 months commencing 3rd February, 1955.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—147 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (Anæsthetist), vacant immediately.

Applications, stating age, nationality, qualifications and experience, together with testimonials, to the Hospital Secretary, by 22nd January, 1955.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. 2 RESIDENT HOUSE PHYSICIANS (general medicine) required for 1st March. Approved as pre-registration posts (first or second). 6 months appointment.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary of Hospital, by 25th January.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE SURGEON (resident) required for 1st March, for 6 months. Approved as pre-registration post (first or second). Recognised for training for F.R.C.S. General, orthopædic and traumatic surgery.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 25th January.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN (Junior grade), vacancy 1st February.

Applications, stating age and qualifications, with 3 testimonials, to the House Governor before 18th January.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER (Male or Female), graded Senior House Officer, at Hackney-road, E.2, to become vacant 1st April, 1955. Candidates must have had experience in the treatment of sick children. The appointment will be for 1 year.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with copies of not more than 3 testimonials, not later than 31st January, 1955.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON with care of gynæcological beds, vacant 1st March, 1955. The appointment will be for a period of 6 months. Salary on National Health Service scale. Candidates will be required to attend for interview.

Applications, stating age and full particulars, to Secretary.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL AND THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY, Gray's Inn-road, W.C.1, and Golden-square, W.1. Applications are invited for a post of REGISTRAR. Considerable clinical experience in general surgery and in this specialty is required. The appointment will be in accordance with the terms and conditions of service in the National Health Service.

Applications, giving full information and the names of 2 referees, should be sent to the House Governor without delay.

ROYAL NATIONAL THROAT, NOSE AND EAR HOS-PITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1, with which is associated the Institute of Laryngology and Otology (University of London). General Practitioner CLINICAL ASSISTANTS and OUTPATIENT ASSISTANTS. These appointments give those engaged in general practice who are able to attend for 2 sessions weekly commencing in March, 1955, the opportunity of widening their clinical experience in the specialty. Remuneration under paragraph 10(*b*) of the National Health Service terms and conditions of service at end of 3 months trainee period.

Further particulars may be obtained from the House Governor.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

(1) REGISTRAR in General Medicine and Infectious Diseases (preferably resident), Rush Green Hospital, Romford, Essex. Duties may include work in Regional Poliomyelitis Unit.

(2) MEDICAL REGISTRAR (resident), Southend General Hospital, Southend-on-Sea, Essex.

(3) REGISTRAR in Diseases of the Chest (resident), High Wood Hospital for Children, Brentwood, Essex. Experience in tuberculosis or diseases in childhood essential.

(4) CASUALTY REGISTRAR (resident), Oldchurch Hospital, Romford, Essex.

(5) SURGICAL REGISTRAR (resident or non-resident), Oldchurch Hospital, Romford, Essex. Recognised for F.R.C.S.

(6) SURGICAL REGISTRAR (non-resident), Hertford County Hospital, Hertford. Recognised for F.R.C.S.

(7) SURGICAL REGISTRAR (resident), East Ham Memorial Hospital, E.7. Recognised for F.R.C.S.

(8) SURGICAL REGISTRAR (resident), Queen Mary's Hospital for the East End, E.15. Recognised for F.R.C.S.

(9) SURGICAL REGISTRAR (resident or non-resident), Hackney Hospital, E.9. (Sleeping in on duty nights.) Recognised for F.R.C.S.

Appointments subject to review after 1 year.

Separate applications in duplicate, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 29th January, 1955.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (46 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER. 2 posts vacant mid-January, recognised for F.R.C.S. 6 months appointments and may be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. ANN'S GENEPAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months commencing 20th February, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, Tottenham, N.15.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (pre- or post-registration). Post vacant 31st January, 1955. Tenable for 6 months. Salary, &c., in accordance with national scale.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Superintendent.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of Whole-time SENIOR REGISTRAR in the Department for Nervous Diseases ; preference will be given to candidates having some experience of this specialty. The appointment is for a first period of 12 months subject to annual re-election ; the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH House Governor, by 26th January, 1955.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. House PHYSICIAN, vacant 1st March. Approved for Pre-registration Service.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOS-PITALS, W.C.2. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Peter's Hospital on 1st April, 1955. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 5th February, 1955.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR. General Medical duties (some tuberculosis). Non-resident.

Application forms from the Group Secretary, St. Luke's Hospital, Sydney-street, S.W.3 (enclose stamped addressed foolscap envelope).

THORPE COOMBE MATERNITY HOSPITAL, Wal-thamstow, E.17. (54 Beds.) Applications are invited from medical Women for the post of JUNIOR OBSTETRIC OFFICER (graded House Officer), vacant 28th February, 1955. The Hospital is recognised by the Royal College of Obstetricians and Gynæcologists.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of RESIDENT MEDICAL OFFICER (Female) at Parkwood Auxiliary Hospital and Convalescent Homes, Swanley, Kent, for 1 year in first instance and renewable. Post vacant from 5th February, 1955, graded as Junior Hospital Medical Officer, and includes duties in outpatient clinics at Westminster Hospital. A deduction of £195 p.a. will be made from salary for board-residence.

Applications (4 copies), with names of 2 referees, to House Governor by 29th January.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of REGISTRAR to Anæsthetics Department for 1 year in first instance from 1st March, 1955.

Applications (8 copies), with names of 2 referees, to House Governor by 29th January.

WESTMINSTER HOSPITAL TEACHING GROUP. The GORDON HOSPITAL FOR RECTAL, COLONIC AND GASTRO-INTESTINAL DISEASES. Applications are invited for the post of SURGICAL SENIOR REGISTRAR at the Gordon Hospital, for 1 year in the first instance, for duty as soon as possible. Candidates must hold the F.R.C.S.

Applications (12 copies), together with the names of 2 referees, should reach the Secretary, The Gordon Hospital, Vauxhall Bridge-road, S.W.1. by 25th January, 1955.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, W.1. Applications are invited for the full-time non-resident post of REGISTRAR in Neurology. Post tenable for 1 year in first instance and renewable subject to review. Duties include assisting the Physicians in both the Inpatient and Outpatient Departments, acting as senior member of the Junior Medical staff, and supervising the House Physicians (Senior House Officers).

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 22nd January, 1955.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6.

RESIDENT HOUSE SURGEON (general and orthopædics) required 1st March. Pre-registration candidates considered.

RESIDENT SENIOR HOUSE OFFICER (anæsthetics) required 1st March.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 22nd January.

WANSTEAD HOSPITAL, Hermon-hill, Wanstead, E.11. (191 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 23rd February, 1955.

Applications, with full details and copies of 2 recent testimonials, to be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

ABERDEEN GENERAL HOSPITALS BOARD OF MAN-AGEMENT. ABERDEEN ROYAL INFIRMARY. Applications are invited from provisionally registered and fully registered medical practitioners for the following House Officer appointments at the above Hospital. The posts which are resident, are approved as Pre-registration Service appointments and are for a period of 6 months from the date of appointment. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

(1) RESIDENT HOUSE OFFICER (ophthalmology).
(2) RESIDENT HOUSE OFFICER (E.N.T.)
(3) RESIDENT HOUSE OFFICER (Department of Psychological Medicine).

Applications, with full details, should be lodged immediately with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen.

ABERDARE GENERAL HOSPITAL, Aberdare. (102 Beds.) MERTHYR AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER. Vacancy 1st February, 1955. Duties include those in general surgery, general medicine, gynæcology, obstetrics, and pædiatrics. Salary £745 p.a., less emoluments.

Applications, stating age, qualifications, &c., together with copies of 2 recent testimonials, to Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for Special Departments (E.N.T., pædiatrics, ophthalmology, &c.). 6 months appointment, vacant 1st March, 1955, or earlier.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (Male) for general surgical duties. 6 months appointments: (1) vacant on 1st March, 1955; (2) on 8th March, 1955. Preference given to pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD.

SENIOR HOUSE OFFICER (or REGISTRAR if suitably qualified) in General Medicine required.

SENIOR HOUSE OFFICER (general surgery) required.

SENIOR HOUSE OFFICER (obstetrics and gynæcology) required. Recognised for M.R.C.O.G.

Apply, stating age, nationality, qualifications and experience, with copies of 2 references, to Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. E.N.T. SURGEON (Senior House Officer grade) required for duty at Ashton-under-Lyne General Hospital.

Applications, stating age, nationality, qualifications and experience with copies of 3 testimonials, to be forwarded to the Group Secretary, General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON for general surgical duties. Tenable for 6 months and recognised under the Pre-registration Service Scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

ASCOT. HEATHERWOOD ORTHOPÆDIC HOSPITAL. (212 Beds—Adults and Children.) ORTHOPÆDIC REGISTRAR (resident) required at above Hospital. Hospital a regional centre for all general orthopædic conditions, including fractures; there is also a large amount of outpatient work. Post recognised for F.R.C.S. Candidates may visit Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 23rd January.

BARNSLEY. BECKETT HOSPITAL. (178 Beds. Recog-nised for the F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (anæsthetics) required with duties also at St Helen Hospital, Barnsley (226 Beds). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BARNSLEY. BECKETT HOSPITAL (178 Beds), ST. HELEN HOSPITAL (226 Beds). SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT/NON-RESIDENT REGISTRAR or SENIOR HOUSE OFFICER (pathology) required. (Single accommodation only available.) Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (215 Beds.) RESIDENT HOUSE SURGEON, vacant February. Recognised by Royal College of Surgeons for Fellowship examinations. Appointments for period of 6 months in General Accident Service and may (at applicant's request) include a period in 32-bedded Burns Unit.

Apply Administrator.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER (including pre-registration), according to experience.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, Birmingham, 29

SURGICAL REGISTRAR for Birmingham Accident Hospital, Birmingham, 15 (215 Beds). Duties in Burns Unit (42 Beds) in conjunction with Medical Research Council. Experience specialty essential. Plastic surgical experience and higher qualification an advantage.

(2) Shrewsbury Group Hospital Management Committee, Royal Salop Infirmary, Shrewsbury

REGISTRAR in Radiology (radiodiagnosis), Shrewsbury Group and Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry. Resident or non-resident.

Application forms from Group Secretaries, to be returned before 31st January, 1955. Candidates may visit hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

Birmingham (Selly Oak) Group of hospitals

Whole-time SENIOR REGISTRAR in General Medicine. Duties mainly at Selly Oak Hospital (1098 Beds). Experience specialty essential. Higher qualification an advantage.

Monyhull Hall Hospital (1143 Beds); **Birmingham (Mental D).Group of hospitals**

Whole-time SENIOR REGISTRAR in Psychiatry, with some duties at ancillary premises including residential special school for 350 children. Hospital recognised for D.P.M. Single accommodation available. Considerable experience specialty required. Successful candidate may be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals in accordance with arrangements for the interchange of Registrars agreed between the 2 Boards.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned before 31st January, 1955.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE SURGEON (general surgery—72 Beds). Vacant mid-January, 1955.

Apply, naming 2 referees, to—

K. G. T. LUXFORD, Esq., Secretary/Finance Officer.
The General Hospital, Bishop Auckland.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (non-pre-registration). The post becomes vacant on 15th March, 1955, and is for duties at Alderney Hospital, Parkstone, and Poole General Hospital. Resident at Alderney Hospital.

Applications to the Hospital Secretary, Poole General Hospital, Longfleet-road, Poole.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. MEDICAL RESEARCH ASSISTANT (Registrar status), required for the Cardiac Department, Poole General Hospital. Salary £850 or £965 p.a., in accordance with the prescribed conditions for the appointment of Registrars. The successful applicant will work with and under the direction of the Physician in charge of the Cardiac Department, and will be engaged entirely in research work.

Applications, stating age, nationality, qualifications, details of experience, and the names of 3 referees, should be sent within 14 days of the appearance of this advertisement, to the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR (resident) in Thoracic Surgery, for duties at the Thoracic Surgical Unit. The Unit provides full facilities for the surgical treatment of tuberculous and non-tuberculous cases. In addition, the holder of this post takes a share in certain of the general surgical work of the Hospital, which takes cases from Bournemouth and parts of Hampshire and Dorset. The post becomes vacant on 1st April, 1955.

Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (non-resident), orthopædic and casualty combined. The post, which becomes vacant on 2nd February, 1955, is recognised for the F.R.C.S. examination and is tenable for 12 months.

Applications to the Deputy Hospital Secretary.

BOSTON. GENERAL HOSPITAL. (80 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (general surgery and E.N.T.) required with relief duties in the Casualty Department. Appointment for 1 year in first instance.

Apply to Secretary Sheffield Regional Hospital Board, Old, Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmology), vacant now. Recognised for D.O.M.S. and F.R.C.S. Salary according to Whitley Council (M.D.B.) rates.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY. Senior House Surgeon (Thoracic Unit), vacant 1st March, 1955. Salary £745 p.a., less £150 p.a. residential emoluments.

Applications, stating age, experience, nationality and qualifications, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. Senior House OFFICER (anæsthetics), vacant 1st March, 1955. Salary £745 p.a., less £150 p.a. residential emoluments. Opportunities for plastic and intra-thoracic experience and recognised for D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRECHIN, ANGUS. STRACATHRO HOSPITAL. (680 Beds.) Applications are invited for the appointment of 2 ORTHOPÆDIC HOUSE SURGEONS at the above Hospital. These posts, which are recognised for pre-registration training but are open to fully registered medical practitioners, are now vacant. The Orthopædic Unit, comprising 196 Beds for adults and children, offers excellent experience.

Applications, giving name, age, qualifications and experience, and naming 2 referees, should be addressed to Medical Superintendent.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP OF HOSPITALS. HOUSE SURGEON required in the E.N.T. Department of the above Group, vacant in March. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, age, and qualifications, and naming 2 referees, to be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, near BRISTOL. Applications are invited for the post of HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER required in the Thoracic Surgery Department which is the Regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Regional Neurosurgery Department. Vacant shortly. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications, quoting 2 referees, to the Secretary, Frenchay Hospital, quoting N.S.F.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Pathology required 1st March, 1955, at Frenchay Hospital (513 Beds—General Medicine, General Surgery and Thoracic, Neurosurgical and Plastic Units for the South West). Post may be resident or non-resident but residence essential when on call. It provides training in all branches of clinical pathology and laboratory is recognised for Diploma in Pathology. Some duties in connection with the Regional Blood Transfusion Service.

Detailed applications, quoting 2 referees, should reach the Group Secretary, Frenchay Hospital, Bristol, by 22nd January, 1955.

BRISTOL CLINICAL AREA. The Board of Governors OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Obstetrics and Gynæcology. The appointment, which is resident, will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Southmead Hospital, Bristol, including obstetric flying-squad duties. He may also be required to undertake duties at other hospitals in the Group.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 29th January, 1955.

BRISTOL CLINICAL AREA. The Board of Governors OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in General Surgery. Accommodation will be available for a single man. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Weston-super-Mare General Hospital but may be required to undertake sessions in other hospitals in the area as circumstances require. The post is recognised for the F.R.C.S.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 29th January, 1955.

BROMLEY GROUP HOSPITAL MANAGEMENT COM-MITTEE. CHEST CLINIC, BROMLEY. JUNIOR HOSPITAL MEDICAL OFFICER required at the above Chest Clinic for 3 years in the first instance, offering good experience in all aspects of chest diseases. Access to beds at Farnborough Hospital.

Apply, giving qualifications, experience, and the names of 2 referees, to the Administrative Officer, Bromley Hospital, Bromley, Kent.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. SENIOR HOUSE OFFICER (surgical), resident or non-resident, at the above Hospital. Salary and conditions of service in accordance with national rules.

Applications should be made to—

H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. FAIRFIELD GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology at Fairfield General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. CLINICAL PATHOLOGIST (Senior House Officer grade). Resident or non-resident, with duties mainly at Bury General Hospital. The post affords opportunities for gaining experience in all branches of pathology.

Apply, stating nationality, qualifications, &c., and names of 2 referees, to H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (285 Beds.) EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR. Post recognised for D.A. and provides wide experience. A furnished flat is available outside the Hospital. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 24th January, 1955. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

CROWTHORNE, BERKSHIRE. BROADMOOR INSTI-TUTION. (920 Beds.) BOARD OF CONTROL. SENIOR REGISTRARS at above Institution for persons of unsound mind of criminal tendencies. Applicants must be registered medical practitioners. Appointments on National Health Service conditions of service and superannuation regulations. Furnished quarters or house on estate available at appropriate charges.

Applications, stating name, date, and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments, and names of 3 referees, to Medical Superintendent, Broadmoor Institution, Crowthorne, Berks, by 29th January, 1955. Envelope to be marked A/S/R. Canvassing in any form leads to disqualification. Candidates may visit Institution by appointment with Medical Superintendent.

CAMBRIDGE MATERNITY HOSPITAL. Senior House OFFICER, from 1st April, 1955, for 1 year. Some previous obstetrical experience essential. Recognised as an obstetrical appointment for M.R.C.O.G. and D.Obst.R.C.O.G. examinations.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, Cambridge, by 29th January. Interviews 9th February.

CAMBRIDGE MATERNITY HOSPITAL. Resident OBSTETRICAL OFFICER (second or subsequent post) for 6 months from 1st April. Recognised Pre-registration Service. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G. examinations.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, by 29th January. Interviews 9th February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON to the Orthopædic Department for 6 months from 1st February, 1955. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary as soon as possible.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 1st March. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates and copies of 3 testimonials, to the Secretary by 25th January. Interviews 4th February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House PHYSICIAN for 6 months from 1st March. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 25th January. Interviews early February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. GYNÆCOLOGICAL HOUSE SURGEON for 6 months from 1st April, 1955. Second or subsequent post. Recognised for Pre-registration Service and M.R.C.O.G.

Apply, stating age, nationality qualifications, and experience with dates, and copies of 3 testimonials, to Secretary, by 29th January. Interviews 9th February.

CHELMSFORD AND ESSEX HOSPITAL. (163 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). Post vacant now and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHEPSTOW. CHEST UNIT, MOUNT PLEASANT HOSPITAL. (150 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER and SENIOR HOUSE OFFICER (resident, or non-resident locally) required. Some previous experience in tuberculosis desirable for Junior Hospital Medical Officer, but not Senior House Officer who will receive a thorough training in the specialty. A new Thoracic Unit is now opening; medical and surgical duties are included in both appointments. Senior Hospital Medical Officer also resident.

Write, quoting 2 referees, to—

T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds.) 2 HOUSE SURGEONS required. Posts recognised for Pre-registration Service and F.R.C.S. training.

CASUALTY OFFICER required. Recognised for pre-registration purposes.

For interview please apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-Sea. (58 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

Essex County Hospital, Colchester (188 Beds)

HOUSE OFFICER (surgical), first, second, third, or pre-registration post; tenable for 6 months.

Black Notley Hospital, Braintree, and Essex County Hospital, Colchester

HOUSE SURGEON, first, second, third, or pre-registration post; tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

COLCHESTER. MYLAND HOSPITAL. (154 Beds.) RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) required for tuberculosis and general wards. Also duties at Colchester Chest Clinic.

Applications, with copies of 3 testimonials, to the Group Secretary Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments:—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (Anæsthetist). Post now vacant.

HOUSE OFFICER (surgical), pre-registration. Post vacant January.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident), Anæsthetist. Post now vacant. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

SENIOR HOUSE OFFICER (surgical).

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DERBY CITY HOSPITAL. (256 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 12th February, 1955.

Apply, stating full details with copies of 2 recent testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Resident SENIOR HOUSE OFFICER (Orthopædic and Accident Service), vacant immediately. Recognised for F.R.C.S.

Apply, stating full details with copies of 2 recent testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (396 Beds. Hospital recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (pre-registration) or SENIOR HOUSE OFFICER (general surgery), vacant immediately.

Apply, stating full details, to Hospital Secretary.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE SURGEON required for the Genito-urinary and General Surgical Departments at above Hospital. Post now vacant and recognised for F.R.C.S. and pre-registration purposes. 6 months appointment.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 29th January, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 20th February, 1955.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 22nd January, 1955.

EDGWARE GENERAL HOSPITAL. (715 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time), resident, required in Department of Anæsthesia at above Hospital, vacant 1st February, 1955. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 25th January, 1955.

EDINBURGH NORTHERN GROUP OF HOSPITALS. RESIDENT ANÆSTHETIST required for the Western General Hospital commencing 1st February, 1955. Salary scale £425–£525 p.a., less £125 p.a. residential emoluments. This post is recognised for the Diploma in Anæsthetics.

Applications, with names of 2 referees, to Medical Superintendent, Western General Hospital, Edinburgh, 4.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Appointment of RESIDENT HOUSE SURGEON (third post), vacant 14th February, 1955. Duties with General Surgical Unit which includes some orthopædics. 6 months appointment. Post recognised by the Royal College of Surgeons.

Applications, with the names and addresses of 2 referees, to the Secretary of the Management Committee.

EPSOM, SURREY. HORTON HOSPITAL. There will be a vacancy after 1st March, 1955, for a SENIOR HOUSE OFFICER (salary £745 p.a.). Applicants must have held a house appointment in a general hospital. Single resident accommodation is available. The Hospital deals with all types of psychiatric illness. There is a special unit (The Mott Clinic) for the treatment of neurosyphilis. Facilities are afforded for attending courses of instruction in London for the D.P.M.

Applications, with the names and addresses of 2 referees, should be sent to the Physician-Superintendent not later than 14 days after the appearance of this advertisement.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (Casualty Department). Resident or non-resident. Vacant 3rd March, 1955.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 29th January, 1955.

FAREHAM, HAMPSHIRE. KNOWLE HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Mental Hospital, where all forms of modern psychiatric treatment are undertaken. Previous psychiatric experience is not essential as training facilities will be available. Terms and conditions of service as approved for hospital medical staff employed in the National Health Service. Salary £775–£50–£1075 p.a. A house is available for a married officer and single residential accommodation is available, but officers, who so desire, may live outside the Hospital.

Applications should be sent without delay to the Physician-Superintendent. M. WALSH, Group Secretary,

Knowle Hospital Management Committee.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) HOUSE SURGEON required for 6 months from 1st March, 1955. Recognised for the F.R.C.S. Preference given to pre-registration candidates.

Apply, stating age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer by 29th January, 1955.

FRODSHAM. LIVERPOOL HOSPITAL, Kingswood, FRODSHAM, CHESHIRE. (132 Beds.) Applications are invited from registered medical practitioners for the position of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, which is for the treatment of pulmonary tuberculosis. Salary in accordance with the national scale—viz., £775–£50–£1075 p.a., less deduction for residence. Resident accommodation for a single person, or house if married.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, should be forwarded to—

Dr. G. S. ERWIN, Physician-Superintendent.

EAST FIFE HOSPITALS BOARD OF MANAGEMENT. CRAIGTOUN MATERNITY HOSPITAL, ST. ANDREWS (41 Beds), AND ASSOCIATED ANTENATAL CLINICS. Applications are invited for the appointment of 2 RESIDENT HOUSE OFFICERS at the above Hospital. The posts will become vacant on 1st April, 1955, and the tenure of each will be for 6 months. At present only 1 of the posts qualifies for pre-registration.

Apply, with references, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Acute Geriatric Unit (70 Beds/for assessment and rehabilitation) supervised by a Consultant Physician specialising in geriatrics. The appointment offers excellent clinical experience in the diagnosis and treatment of acute and other illnesses in the elderly, and will be for 2 years in the first instance.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent to the Medical Superintendent.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Pulmonary Tuberculosis Unit (32 Beds) with an attachment to the associated chest clinic. There are ample opportunities for the study of all forms of chest disease and general medical cases.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent to the Medical Superintendent.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. PSYCHIATRIC UNIT. HOUSE OFFICERS (resident), Male or Female, required. 180 Beds. Over 1300 admissions yearly, acute treatable cases. Unit recognised for D.P.M. Salary £50 above standard rate.

Apply to Medical Superintendent.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 26th January, 1955.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (Pre-registration or Senior House Officer grade). The Hospital has a well-equipped medical library and reading room.

Applications, together with the names of 2 referees, to be sent to the Hospital Secretary, Grimsby General Hospital, Grimsby.

GRIMSBY. SPRINGFIELD HOSPITAL. (210 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (chest and infectious diseases) required. Single accommodation only available. There is a Thoracic Unit at the Hospital. Some clinic work would be undertaken under Consultant supervision. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Pre-registration post, vacant 10th February, 1955. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic), post vacant 26th January, 1955. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (499 Beds.) HOUSE PHYSICIAN (resident) for pædiatrics and general medicine (post-registration), vacant now. National scale of salary.

Apply to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer). Post vacant 1st February, 1955.

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary.

HEREFORD. COUNTY HOSPITAL. (333 Beds.) House OFFICER (general surgery) required.

Applications, with copies of 2 recent testimonials, to be sent to the Medical Superintendent, County Hospital, Hereford.

HERTFORD COUNTY HOSPITAL. (Situated 21 miles from London.) Applications are invited from regi tered medical practitioners for the appointment of a Whole-time Locum REGISTRAR (surgical), to commence as soon as possible. Salary £17 10s. per week.

Applications, giving full details, together with copies of recent testimonials or the names of referees, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of HOUSE SURGEON (general, gynæcology, and obstetrics—first or second post). Recognised under F.R.C.S. regulations, pre-registration post. Duties to commence 7th February, 1955.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post), to commence 21st January, 1955. Pre-registration post ; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. MEDICAL REGISTRAR, General Medical Unit at above Hospital. Candidates should hold a higher medical qualification. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Field Heath-road, Uxbridge, Middx., by 24th January.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—705 Beds.) HOUSE SURGEON (resident) for gynæcological duties. Previous gynæcological experience desirable but not essential. Post recognised for M.R.C.O.G. and vacant early March.

Apply, stating age, nationality, qualifications, experience, and enclosing copies of not more than 3 testimonials, to Medical Director by 24th January.

HORNCHURCH, ESSEX. ST. GEORGE'S HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (resident) required early in January, 1955, at this Hospital which accommodates 339 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE HOUSE SURGEON required to commence duty on 1st February, 1955. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

ILFORD AND BARKING GROUP HOSPITAL MANAGE-MENT COMMITTEE. ILFORD ISOLATION HOSPITAL, Grove-road, CHADWELL HEATH, ESSEX. There is a vacancy for the position of RESIDENT MEDICAL OFFICER (chest diseases) (Junior Hospital Medical Officer status) at the above Hospital of 75 Beds. Salary £775 (for an officer appointed not less than 2 years after registration as a medical practitioner)–£50–£1075 p.a. The Officer appointed would be expected to work under the general direction of the Chest Physician, Ilford, and to undertake some duties at Ilford Chest Clinic as may be directed by the Chest Physician.

Applications, stating age, qualifications, and previous experience, together with recent testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement. H. F. HARRIS, Group Secretary.

King George Hospital, Ilford.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (270 Beds.) Applications are invited for the post of HOUSE SURGEON (obstetric and gynæcology), which becomes vacant on 28th February 1955. Recognised for the D.Obst.R.C.O.G.

Applications, giving details of qualifications, age, nationality and experience, together with copies of 2 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOS-PITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to the Hospital Secretary.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. (112 Beds.) HOUSE SURGEON (pre-registration), required immediately at the above Hospital.

Applications, with the names of 3 referees, to the Hospital Secretary.

KIRKCALDY GENERAL HOSPITAL. (74 Beds.) House OFFICER required as at 1st February, 1955. The post qualifies for pre-registration.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy, Fife.

LINCOLN. COUNTY HOSPITAL. (200 Beds. Recognised for training in Gynæcology for M.R.C.O.G.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (obstetrics and gynæcology) required. Post becomes vacant on 1st March. Duties mainly in gynæcology. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for the following Resident House Officer posts for the 6 months from 1st March to 31st August, 1955.

Royal Southern Hospital
ORTHOPÆDIC HOUSE SURGEON (Professorial Unit).
CASUALTY OFFICERS.

Royal Liverpool Children's Hospital
JUNIOR CASUALTY OFFICER (City Branch).
HOUSE SURGEON (Heswall Branch).

The posts are open to registered practitioners and pre-registration applicants.

Apply by 22nd January, 1955, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ST. PAUL'S EYE HOSPITAL. Applications are invited for a post of SENIOR HOUSE OFFICER in Ophthalmology for the period to 30th September, 1955.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for a post of SENIOR HOUSE OFFICER in Otorhinolaryngology for the period to 30th September, 1955.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. WALTON HOSPITAL. Applications are invited from pre-registration and fully qualified practitioners for the following posts, vacant on 1st March and 1st April, 1955.

HOUSE PHYSICIANS (5), general medicine.
HOUSE SURGEONS (5), general surgery.
HOUSE SURGEONS (2), gynæcology.
HOUSE SURGEON (1), orthopædics.
HOUSE OFFICERS (2), obstetrics.

Applications are also invited for the following SENIOR HOUSE OFFICER posts :—

In Orthopædics, vacant on 1st March, 1955.
In Psychiatry, vacant on 1st February, 1955. (Recognised for D.P.M.).

Applications should be addressed to the Physician-Superintendent, Walton Hospital, Liverpool, 9.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of SENIOR ANÆSTHETIST (Senior House Officer), now vacant. Post offers varied experience and is recognised for the D.A. examination.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Secretary immediately.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) Applications are invited for HOUSE OFFICER (anæsthetics). The post is recognised for D.A.

Applications to Hospital Secretary.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

St. Luke's Hospital, Bradford, and other hospitals in the Bradford A Group (resident).

Dermatology

Duties mainly at the Bradford Royal Infirmary (40 dermatological beds). Large Outpatient Department—5000 new cases annually (resident).

Ophthalmology

(*a*) Huddersfield (22 eye beds—1800 new outpatients annually) (non-resident).

(*b*) Halifax and Bradford A Hospital Management Committee Groups. Duties divided equally between Halifax Group (11 eye beds—1800 new outpatients annually) and Bradford A (34 eye beds—5800 new outpatients annually).

Orthopædic Surgery

(*a*) Royal Bath Hospital, Harrogate (40 orthopædic beds). Duties in connection with the Regional Rheumatism Scheme (resident).

(*b*) Duties mainly at Pinderfields General Hospital, Wakefield (70 short-stay and 160 long-stay orthopædic beds) and at other hospitals in the Wakefield A and B Groups (resident).

Psychiatry

Meanwood Park (Mental Deficiency) Hospital, Leeds (700 Beds). Accommodation available for a single person. (Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.)

Applications, stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Parkparade, Harrogate, not later than 27th January, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer status) required. The post will be for an initial period of 6 months, renewable for a further 6 months thereafter.

Applications, stating age, qualifications and previous posts with dates, with the names of 3 referees, should reach the Secretary to the Board not later than 29th January, 1955.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited for post of HOUSE SURGEON, vacant immediately. Preference given to persons seeking a pre-registration post.

Applications, stating age, nationality and qualifications, with names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant January, 1955. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MAIDSTONE (near). LENHAM SANATORIUM. Mid-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from practitioners, with at least 1 years experience after full registration, for the appointment of RESIDENT ASSISTANT PHYSICIAN at Lenham Sanatorium, near Maidstone. Previous experience in tuberculosis not essential. Post vacant February, 1955. The Sanatorium has 168 Beds ; is visited by Thoracic Surgeons ; is 1½ hours travelling distance from London. Salary according to experience within the scale £775–£50–£1075 a year, with a deduction of £150 for residential emoluments. Appointment for 12 months in the first instance.

Applications, with the names and addresses of 2 referees, to the Physician-Superintendent, Lenham Sanatorium, near Maidstone (Telephone No. Lenham 314).

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of REGISTRAR (geriatrics) at Withington Hospital. The post offers excellent experience in all branches of geriatric medicine in a well-established department.

Applications, stating age, qualifications, present post, experience and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Orthopædics, based at Bury General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology at Fairfield General Hospital. The post is resident and a house is available in the Hospital grounds.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Non-RESIDENT SENIOR REGISTRAR in Plastic Surgery, mainly at Wythenshawe Hospital, Manchester. Good training and experience in general surgery and higher qualification essential.

Forms of application, obtainable from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, should be returned by 24th January, 1955.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purposes of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st April, 1955. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 1st February, 1955.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR REGISTRAR to the Department of Diagnostic Radiology, to commence as soon as possible. Whole-time non-resident appointment for 12 months, renewable. Applicants must possess the D.M.R.D. or its equivalent. Arrangements may eventually be made for the successful candidate to transfer to 1 of the Manchester Regional Hospitals to continue training.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 5th February, 1955.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—411 Beds.) HOUSE OFFICER (general surgery) required, pre-registration post. Recognised for F.R.C.S. examination. Vacant 28th January, 1955.

Application forms from Secretary.

NEATH GENERAL HOSPITAL, Neath. (412 Beds.) MID-GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. Appointment available 1st February, 1955, and tenable for 6 months. This Hospital is recognised for F.R.C.S., M.R.C.O.G., D.C.H., D.A., and is approved by the General Medical Council for Pre-registration Service under Section 2 of the Medical Act, 1950.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

NEWPORT AND EAST MONMOUTHSHIRE HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE SURGEONS posts vacant 1st February, all recognised F.R.C.S.

Royal Gwent, Newport (260 Beds, 10 residents). Covers 37 Beds.

St. Woolos, Newport (379 Beds). Covers 56 Beds, with Consultant and Registrar engaged only here.

Pontypool and District, Pontypool (115 Beds). Covers 31 Beds.

Write, mentioning names of 2 referees and post preferred to T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 8th February, 1955, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to H. M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. (441 Beds. Recognised for D.Path.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (pathology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 24th January, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER, duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), vacant 1st March, 1955. The post is approved for F.R.C.S. The officer appointed will be required to spend 6 months in general surgery, 3 months thoracic surgery, and 3 months orthopædic and plastic surgery. A deduction of £150 p.a. will be made for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 26th February, 1955. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL. Applications are invited from fully qualified medical practitioners for the post of SENIOR HOUSE OFFICER in the Obstetrical and Gynæcological Department (41 obstetrical beds, 11 gynæcological beds and a small block for puerperal pyrexia). The appointment is for a period of 12 months commencing about the middle of January. The Hospital is recognised for the M.R.C.O.G. (Obstetrics only). Previous obstetric experience required. Salary and conditions of service in accordance with the Ministry regulations.

Applications, stating age, qualifications, and experience, also nationality, with copies of 3 recent testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and orthopædic surgery. Recognised for the Final F.R.C.S. in General Surgery, and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Radiotherapy and E.N.T. Departments. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January, 1955.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN for general medicine and dermatology. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer by 25th January 1955.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. The post of SENIOR HOUSE OFFICER (anæsthetics) will fall vacant at Bridge of Earn Hospital in February, 1955. The post is recognised under the regulations for the D.A.

Applications, giving age, qualifications, experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PETERBOROUGH MEMORIAL HOSPITAL AND ANNEXES. EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR. Post recognised for D.A. and F.F.A.R.C.S. and provides experience in all departments including a Thoracic Unit. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 31st January, 1955. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of CASUALTY OFFICER (Senior House Officer grade) at the above Hospital. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, accompanied by copies of 2 recent testimonials, should be sent to the Group Secretary, "Rhianfa," Russell-road, Rhyl, within 14 days from the date of publication of this advertisement.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1955. There will be additional duties at the Plete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Casualty, vacant 5th February, 1955.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

(1) **Royal Portsmouth Hospital**

(*a*) HOUSE OFFICER required in the Traumatic and Orthopædic Department (105 Beds). Duties at the Royal Portsmouth Hospital. Vacant now.

(*b*) HOUSE PHYSICIAN required (65 medical beds). Pre-registration post. Vacant 17th February.

(2) **St. Mary's Hospital**

HOUSE PHYSICIAN required (74 medical beds). Pre-registration post. Vacant 24th February.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIAN posts now vacant at above Hospital. Pre-registration candidates eligible.

Apply Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, at once.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.

Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit from 26th January, 1955. The service consists of 100 beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as early as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 1st March, 1955. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE PHYSICIAN required from 6th March, 1955. This Hospital provides for acute medical and surgical patients in addition to a limited number of fever cases. The post, which is also open to pre-registration candidates, offers good opportunities for gaining experience in both general medicine and fevers.

Applications should be addressed immediately to Medical Superintendent, stating also names of 2 referees.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in the Area Department of Diseases of the Chest, for duty in the Reading Chest Clinic. Starting salary within the scale will be fixed by agreement with Ministry of Health, according to qualifications and experience.

Applications, stating age and qualifications, together with names of 3 referees, should be sent to the Group Secretary at 3, Craven-road, Reading.

READING. BATTLE HOSPITAL. (374 Beds.) Applications are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st March, 1955. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female), for the post of RESIDENT JUNIOR HOUSE SURGEON (general surgery), vacant 21st February, 1955, for a period of 6 months. Salary £425–£525, according to experience, less £125 board-residence.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.), vacant 21st February, 1955. Salary £425–£525 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to Secretary.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOSPITAL. (1143 Beds.) BOARD OF CONTROL. REGISTRAR at above Hospital for mental defectives with conduct disorders. Post offers exceptional opportunity for study of and research into psychopathic behaviour and delinquency. Hospital is modern and recognised for D.P.M. in mental deficiency. Applicants must be registered medical practitioners. Previous experience in general psychiatry an asset. Appointment on National Health Service conditions of service and superannuation regulations. Furnished quarters, attendance and food, or house on estate, provided at appropriate charges.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments and names of 3 referees, to Medical Superintendent, Rampton Hospital, Retford, Notts, by 29th January, 1955. Envelope to be marked A/R. Canvassing in any form leads to disqualification. Candidates may visit Hospital by appointment with Medical Superintendent.

SCUNTHORPE LINCOLNSHIRE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for RESIDENT HOUSE SURGEON (Senior House Officer) end of January—combined post general surgery and gynæcology.

Applications, naming 2 referees, to Group Secretary.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in the Regional Pool of Anæsthetists, based on the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 12th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Tuberculosis at Southfield Hospital, Edinburgh. The post is attached to the Professorial Unit of the Department of Tuberculosis and Diseases of the Respiratory System, University of Edinburgh. The holder will be expected to take part in teaching and research in addition to clinical duties. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, 11, Drumsheugh-gardens, Edinburgh, 3, by 12th February, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Radiodiagnosis to the Edinburgh Northern Group of hospitals, from 1st April, 1955. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 5th February, 1955.

SHEFFIELD. CITY GENERAL HOSPITAL. Department OF PATHOLOGY GROUP LABORATORY. Applications are invited for the appointment of SENIOR HOUSE OFFICER (clinical pathology) vacant 1st February, 1955. Resident accommodation is available and optional. Opportunities for training in morbid anatomy, biochemistry, hæmatology and bacteriology. The work at this and the associated hospitals offers excellent experience to graduates who wish to make pathology their permanent career. The post is recognised for the D.Path.

Apply, giving details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications are invited for the non-resident post of REGISTRAR in Neurosurgery at the above Hospital.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, before 7th March, 1955.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Applications invited for the non-resident post of SENIOR REGISTRAR in Neurosurgery at the above Hospital. An appointment was recently made to this post but the successful applicant has since obtained a Consultant post elsewhere and has therefore withdrawn.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent before 7th March, 1955, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum SENIOR HOUSE OFFICER (casualty), 1 of 2, required.

Apply Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. SENIOR HOUSE OFFICER required for Obstetric and Gynæcological Department. Preference given to applicants with general and obstetric experience.

Applications, stating age, experience, and qualifications, with testimonials, to Hospital Secretary before 21st January.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical) required for post vacant 1st February.

Applications, stating age, and qualifications, with copies of 2 recent testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Post vacant 22nd January. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with 2 recent testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with copies of 2 testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required for pre-registration post, vacant 6th February. Appointment offers considerable experience in general acute medical work.

Applications, with copies of 2 recent testimonials, to Hospital Secretary, by 24th January.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic). Required for the above Hospital (Orthopædic Unit 74 Beds) in January. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHALL, MIDDLESEX. ST. BERNARD'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident). Facilities are afforded to junior staff to become versed in all branches of psychiatry. National Health Service salary and conditions.

Applications, giving full details and copies of 3 recent testimonials, should be sent to the Physician-Superintendent, within 14 days of appearance of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as a Whole-time REGISTRAR in Obstetrics and Gynæcology to fill a vacancy in the approved trainee establishment at the Medway and Gravesend Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 29th January, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Bromley, Kent, Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 29th January, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Tunbridge Wells Group of hospitals, for duty mainly in the Plastic Surgery and Jaw Injuries Centre at the Queen Victoria Hospital, East Grinstead. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 29th January, 1955.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. (2285 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (psychiatric), resident or non-resident, for 1 year in the first instance, at Shenley Hospital, 16 miles from London. Opportunity for work with neurotic as well as psychotic patients, and full facilities for D.P.M. training. The Hospital may be visited by appointment.

Applications to the Medical Superintendent.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (E.N.T.), vacant immediately. Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S.

Applications, with copy testimonials, to the Group Secretary, Royal Salop Infirmary, Shrewsbury.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—32 Recovery Unit.) HOUSE SURGEON (Male or Female). Post or pre-registration candidates considered. Post vacant now.

Applications, giving full particulars and copies of 3 recent testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STIRLING AND CLACKMANNAN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of SENIOR HOUSE OFFICER in General Surgery at Clackmannan County Hospital vacant as from 1st February, 1955.

Applications, giving 3 names for reference, should be sent to the Group Medical Superintendent, Stirling Royal Infirmary.

STRATFORD-ON-AVON HOSPITAL. (187 Beds.) Locum JUNIOR HOSPITAL MEDICAL OFFICER (casualty) required for 3 weeks from 30th January, 1955.

Apply Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. RESIDENT SURGICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 23rd January.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR required to the Special Unit for Research in Juvenile Rheumatism at the above Hospital. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 6th February.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. HOUSE SURGEON (general surgery and orthopædics) required at the above Hospital for period 1st February, 1955–30th April, 1955. Salary and conditions of service in accordance with national recommendations.

Applications to the Group Secretary at the above address.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) HOSPITAL MANAGEMENT COMMITTEE NO. 9 WAKEFIELD A GROUP. HOUSE PHYSICIAN (general medicine and dermatology) required at the above Hospital for period 1st March, 1955–30th April, 1955. Salary and conditions of service in accordance with national recommendations.

Applications to the Group Secretary at the above address.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. THORACIC UNIT. Applications invited for the following appointment now available in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

SENIOR HOUSE SURGEON. Salary £745 p.a., less a charge of £155 p.a. for board, lodging, &c., or

Locum SENIOR HOUSE SURGEON. Salary £14 10s. per week, less a charge of £2 19s. 6d. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

W. BOWRING, Group Secretary.

Victoria Chambers, Wood-street, Wakefield.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (198 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Salary according to National Health Service scale.

Applications, with 2 copies of recent testimonials, should be sent to CYRIL HOPKINSON, Administrator.

WATFORD PEACE MEMORIAL HOSPITAL AND SHRODELLS HOSPITAL, WATFORD. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at above hospitals which may be visited by direct appointment. Post vacant immediately.

Application forms obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for RESIDENT HOUSE PHYSICIAN (Male or Female), recognised for pre-registration. National Health Service terms and conditions. The appointment offers a wide and comprehensive experience in general medicine, including acute medical, pædiatric, and infectious diseases. Staffing of the Medical Unit consists of a Registrar, Pædiatric Senior House Officer, and 2 House Physicians.

Applications should be forwarded to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the D.A. examination. Scale of salary £745 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT CASUALTY OFFICER (Male or Female). The post is graded Junior Hospital Medical Officer. Scale of salary £775–£50–£1075, less a deduction of £130 for residential emoluments. Applications will also be considered from Junior Medical Officers who would be graded House Officer or Senior House Officer at the scale appropriate to the experience of the applicant. Consideration will also be given to applicants who desire the appointment on a short-term basis. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience, and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs
(Tel. No. Warrington 1666).

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (obstetrics and gynæcology), Maelor General and War Memorial Hospitals, Wrexham (60 Beds), and Trevalyn Maternity Hospital, Rossett, near Wrexham (45 Beds). Resident.

SURGICAL REGISTRAR (orthopædics) to serve Cardiff Hospital Management Committee. Based at Prince of Wales Hospital, Rhydlafar, near Cardiff (200–300 Beds). Hospital is Regional Orthopædic Centre for South Wales area.

REGISTRAR (general surgery), Caernarvon and Anglesey General Hospital, Bangor (134 Beds). Resident/non-resident.

REGISTRAR (general surgery). To serve Newport and East Mon Hospital Management Committee. Based at Royal Gwent Hospital, Newport (260 Beds). Non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited from medical practitioners, either qualified or undertaking Pre-registration Service, for 3 HOUSE SURGEON posts at the Dunfermline and West Fife Hospital, Reid-street, Dunfermline (General Surgical—117 Beds). Resident. Salary and conditions of service in accordance with Whitley Council agreements. The successful applicants will be required to take up duty on 1st and 20th March, 1955.

Applications, giving full particulars, should be made to the Medical Superintendent.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 9th February.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Medicine (Registrar grade) required at the above Hospital, vacant 1st May, 1955. Accommodation may be made available for married candidate.

Forms of application obtainable from the Group Secretary, Royal Hampshire County Hospital, must be completed and returned not later than 7th February.

WINDSOR. KING EDWARD VII HOSPITAL. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER (medical), vacant immediately.

Applications, stating age, nationality, qualifications, and experience with copies of recent testimonials, to Hospital Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON required, Male or Female. Post recognised for both M.R.C.O.G. and D.Obst.R.C.O.G. but not for pre-registration. Successful candidate will be resident at Old Windsor Unit of Hospital. Must be member of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, with copies of recent testimonials or names of 3 referees, to Hospital Secretary by 31st January.

WINDSOR. KING EDWARD VII HOSPITAL. Resident SURGICAL REGISTRAR required at above Hospital which may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 30th January.

WOODFORD GREEN, ESSEX. HARTS HOSPITAL. (100 Beds.) HOUSE OFFICER required, post vacant 26th January, 1955. The Hospital is a modern sanatorium with a Thoracic Surgical Unit and area chest clinic. The post offers exceptional opportunity for gaining experience in tuberculosis and diseases of the chest. The Hospital is close to the underground railway and within easy reach of Central London.

Applications, with copy of a recent testimonial, should be sent to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WORCESTER ROYAL INFIRMARY. Applications invited for post of RESIDENT ANÆSTHETIST (Senior House Officer status) now vacant and tenable for 1 year. The post is recognised for the Diploma in Anæsthetics and the holder may expect to gain a great deal of experience with emergency work.

Applications, with copies of 3 testimonials, to be sent to the Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for post of HOUSE SURGEON (pre-registration or otherwise), now vacant.

Applications, with testimonials, to the Secretary.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (An Associated Hospital of the University of Birmingham Medical School) 2 HOUSE OFFICERS (general surgery). Approved for Pre-registration Service. Vacant now.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. 2 HOUSE SURGEONS (pre-registration posts). Recognised F.R.C.S. 1st vacant 7th February (casualty duties), 2nd vacant 21st February (general duties).

Applications, together with names of 2 referees, to Secretary, Wigan Infirmary.

WINDYGATES, FIFESHIRE. CAMERON I.D. HOSPITAL. RESIDENT HOUSE PHYSICIAN required for 6 months as from 1st February, 1955. The post is recognised for Pre-registration Service. The Hospital consists of 100 infectious diseases beds including 12 for treatment of tuberculous meningitis, and 30 chronic sick beds. Salary in accordance with national scale.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

YORK. COUNTY HOSPITAL. (Acute Hospital of 269 Beds with full Consultant staff.) CASUALTY OFFICER (with charge of orthopædic beds), Junior Hospital Medical Officer grade, required 9th February, 1955. Resident or non-resident. Salary £775–£50–£1075 p.a., less £153 p.a. if resident. Recognised for F.R.C.S.

Applications, giving age, nationality, qualifications, experience, and names of 2 referees, immediately to the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks. (207 Beds.)

HOUSE SURGEON (first, second, or third post), vacant mid-February. General surgical duties some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Recognised for F.R.C.S. Approved pre-registration post. Fully-qualified practitioners may apply.

Apply Group Secretary.

IRELAND. ST. JOHN OF GOD PSYCHIATRIC HOSPITAL, STILLORGAN, DUBLIN. Applications invited immediately for positions of :—

(1) REGISTRAR;
(2) HOUSE PHYSICIAN;

to the above Hospital.

Interview by appointment.

All inquiries directed to the Secretary, St. John of God Hospital, Stillorgan, Dublin, Eire.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as REGISTRAR in General Medicine at hospitals managed by the West Tyrone Hospital Management Committee. The terms and conditions will be in accordance with the application of the Spens Report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 12th February, 1955.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved, Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md., U.S.A.

BOSTON, MASS., U.S.A. BETH ISRAEL HOSPITAL. Applications are invited for ASSISTANT RESIDENTS in Pathologic Anatomy at above Hospital, a 350-bed teaching hospital of Harvard Medical School. Appointments are open beginning 1st July or 1st September, 1955, and are renewable annually. 4-year training course approved by American Medical Association. Cash stipend plus board and residence.

Apply Pathologist, Beth Israel Hospital, Boston, 15, Mass.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of SENIOR REGISTRAR in the Department of Diagnostic Radiology at the above-named Teaching Hospital which is in special relationship with the University of London. Preference will be given to candidates holding a Diploma in Diagnostic Radiology. The appointment will be for 1 year in the first instance, subject to renewal. Salary will be in the scale £1000–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board or a limited number of unfurnished flats for unmarried or married officers, are provided at a deduction of £125 p.a. or 5 % of salary, respectively. Return first-class passage by sea will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality, and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees and including the approximate date on which the candidate could become available, should be sent by 28th February, 1955.

Public Appointments

OLDHAM. COUNTY BOROUGH OF OLDHAM. Applications are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER. The appointment affords an excellent opportunity for obtaining experience in the Public Health and School Health Services. Salary £950–£50–£1300 p.a. The point of entry will be fixed according to qualifications and experience. The appointment is subject to the provisions of the Local Government Superannuation Acts, and to medical examination.

Applications stating age, qualifications, and experience, should be forwarded to the Medical officer of Health, Public Health Department, Town Hall, Oldham, together with copies of 2 testimonials, or the names of 2 persons to whom reference may be made. EDWARD HAINES, Town Clerk.

COMMONWEALTH OF AUSTRALIA. Public Service OF PAPUA AND NEW GUINEA. Vacancies. DEPARTMENT OF HEALTH.

SPECIALIST MEDICAL OFFICER (tuberculosis). £2650 p.a. (Australian).

Qualifications : Doctor of Medicine, M.R.C.P., or M.R.A.C.P., experience in control of tuberculosis and other thoracic diseases.

SPECIALIST MEDICAL OFFICER (malariology). £2650 p.a. (Australian).

Qualifications : Graduate in medicine registrable in Australian States or United Kingdom with D.T.M.&H. or equivalent; wide experience in malaria control, particularly mosquito control. Preference given applicants with higher degrees and necessary experience.

General Information

Appointment : The successful applicants will be appointed in an exempt capacity for 4 years.

Headquarters : Port Moresby. Appointees will be required to travel according to the exigencies of the Service.

Accommodation : Married accommodation available if required.

Leave : 3 months after 21 months in Territory.

Taxation : Income derived by residents of the Territory from sources within the Territory is not at present taxable under Commonwealth legislation.

Further information : Information handbooks on the Public Service of Papua and New Guinea and statements about the Territory Department of Health, are available from the Public Service Board Representative, c/o High Commissioner's Office, Australia House, Strand, London. Other inquiries to the Department of Territories, Canberra, A.C.T., Australia.

Applications : Submit on prescribed form available from the above offices to The Secretary, Department of Territories, Canberra, A.C.T., Australia, by 5th February, 1955.

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL MEDICAL OFFICER. The salary will be £1533 6s. 8d. p.a., rising by annual increments of £100 to £1833 6s. 8d. Candidates must be registered medical practitioners possessing the Diploma in Public Health. The appointment will be superannuable and the successful candidate must pass a medical examination. Candidates must be able to drive and possess a motor-car. Travelling and subsistence allowances payable on Council's scale.

Forms of application with particulars of duties and conditions of appointment may be obtained from the County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent not later than 4th February, 1955.

GUY H. DAVIS, Clerk of the County Council.

Shire Hall, Gloucester.

MANCHESTER. CITY OF MANCHESTER TRANSPORT DEPARTMENT. MEDICAL OFFICER. Applications are invited for this whole-time superannuable appointment, the salary scale for which is J.N.C. "F" (£1517 10s.–£52 10s.–£1780 p.a.). Commencing salary will be fixed according to experience and qualifications.

Further particulars, together with forms of application, may be obtained from the Town Clerk, Town Hall, Manchester, 2, to whom the completed form should be returned (endorsed "Medical Officer—Transport Department") not later than 31st January, 1955. Canvassing will disqualify.

SURREY COUNTY COUNCIL. Appointment of Assistant MEDICAL OFFICER. Applications are invited for this full-time appointment. Applicants should possess either the D.P.H. or D.C.H. The main duties will be in connection with the School Health and Maternity and Child Welfare Services. Salary according to experience on the grade £950–£50–£1300 p.a. The appointment is subject to satisfactory medical examination, to the provisions of the Local Government Superannuation Acts, 1937–1953, and to 3 months notice on either side.

Application form from the County Medical Officer, County Hall, Kingston-on-Thames, to be returned by 22nd January, 1955.

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. Appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male or Female). Applications are invited from registered medical practitioners for the above permanent appointment. Preference will be given to those holding the D.P.H. or D.C.H. and with previous experience. Salary and conditions will be in accordance with the Whitley Council. The candidate will be required to provide a motor-car in the performance of duties, for which Whitley Council scale allowances are payable.

Further particulars (including details of area and duties) and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 28th January, 1955.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 30th December, 1954.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 4 years, on termination of which a gratuity of £600 (tax free) is payable. Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

GOVERNMENT OF NORTH BORNEO. **Medical Officer** (Malaria Control Officer) who has leanings towards anti-malarial work is required in North Borneo to work with a World Health Organisation team and to conduct the work after the withdrawal of international assistance. The objectives of the World Health Organisation team are :—

(1) To study the malaria situation with a view to preparing a "malaria map" of the country, thus enabling a closer determination of the extent of the problem ;

(2) To determine by conducting spraying operations in selected areas, whether, in the conditions found in the Colony, residual spraying with insecticides such as D.D.T. and dieldrin would be effective and economic means of controlling malaria ;

(3) To apply the experience and information obtained from the W.H.O. Sarawak Malaria Control Project in the planning and execution of operations in North Borneo, which will be conducted under the supervision and coördination of Dr. J. de Zulueta, Senior Adviser for W.H.O. Sarawak scheme ;

(4) To assist Government in planning and expanding the Malaria Control Programme in so far as the pilot project may have had demonstrated it to be practicable and effective ;

(5) To train local personnel in all aspects of malaria control and to assist Government to establish a Malaria Control Service in the Medical Department commensurate with the needs of the country.

Appointment will be on short-term contract for 3 years in the first instance with gratuity on completion of satisfactory service. Salary scale, including pensionable expatriation pay, ranges from $780 to $1255 a month (£1092 to £1757 a year. 1 North Borneo dollar equals 2s. 4d.). Starting salary depends upon qualifications and experience. In addition, a cost-of-living allowance may also be payable, up to approximately £350 a year, and is determined by the officer's salary and family circumstances ; it is subject to periodical revision. Quarters are provided at low rental. Income-tax at local rates. Free passages in both directions are provided for Officer, wife, and up to 3 children under 18 years of age. Local leave is permissible and generous home leave is granted after tour. Candidates must possess medical qualifications registrable in the United Kingdom ; possession of a D.T.M.&H. is desirable but not essential.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/21/09).

GOVERNMENT OF SINGAPORE. **Medical Registrar** required to undertake duties in 1 of 2 Medical Units in the Singapore General Hospital, which is a teaching hospital. Candidates should be Members of 1 of the Royal Colleges of Physicians and have had 4 years postgraduate experience. Appointment will be on contract for 3 years' resident service. On satisfactory completion of the contract, a gratuity (taxable) is payable in respect of each year of service at the rate of £300 p.a. rising by annual increments of £10 p.a. to £450. Incremental credit in this gratuity scale corresponds with incremental credit in the salary scale. Alternatively, a doctor in the National Health Service may, by foregoing the gratuity, continue to participate in the National Health Service superannuation scheme and receive a gratuity (taxable) of 20 % of the aggregate of his Singapore salary. The emoluments of the post comprise a basic salary ; a variable cost-of-living allowance and expatriation pay and expatriation allowances. Basic salary is on an incremental scale of £890–£1680 p.a., but candidates would be granted increments in that scale in respect of the required qualifications and experience and would enter the scale at an initial salary of approximately £1272. The initial salary would be less if any of the required experience were gained below the age of 25 and slightly more if the candidate had more than the required 4 years experience. The other emoluments vary according to salary and the family circumstances of the officer, but on a basic salary of £1272, the total inclusive emoluments are approximately £1686 a year for an unmarried officer, £2050 for a married officer and £2254 for a married officer with dependent children. The emoluments referred to above apply only to doctors eligible for "expatriate terms" under Malayan Regulations (i.e., those whose permanent homes are in the United Kingdom, Irish Republic, Australia, Canada, &c.). The climate is, for the tropics, healthy. European children do well up to the age of about 6 and schools are available locally. Income-tax is payable at Singapore rates. Government quarters with heavy furniture are provided if available at low rental, or an allowance is paid in lieu of quarters. Free passages are provided for the doctor, his wife, and up to 3 children under the age of 10. Generous home leave is granted and local leave is permissible.

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/25/06).

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy"

BARKING, ESSEX. **Applications invited for death** VACANCY (urban). List at present approximately 1600. Residential and/or surgery accommodation may be available. Apply on Form E.C.16A before 27th January, 1955, to—
E. BERGDAHL, Clerk of the Council.
Essex Executive Council, 131/3, Fillebrook-road, Leytonstone, E.11.

MANCHESTER. **Applications invited from doctors** wishing to undertake General Medical Services in Manchester. The list is approximately 1500 and surgery accommodation (but not residence) will be available for purchase. Applications, on Form E.C.16A (obtainable from address below) must be received by the undersigned not later than 29th January, 1955.
H. GLASS, Clerk of the Council.
Ardwick Town Hall, Ardwick Green North, Manchester, 12.

CHATHAM, KENT. **Applications invited for Vacancy** (mainly urban). List at present approximately 3040. Residence not available but the 2 present surgeries may be available by rental. Apply on E.C.16A before 29th January, 1955, to—
F. E. MILES, Clerk,
Kent and Canterbury Executive Council.
11, Station-road, Maidstone.

COUNTY BOROUGH OF READING EXECUTIVE COUNCIL. Applications are invited from registered medical practitioners for a VACANCY in a newly-completed Corporation housing estate ; approximately 1100 houses, shops, &c. Residence and surgery on estate provided by Corporation for rental ; ready for occupation 1st April. Vacancy has been "designated." Initial practice allowance payable to selected candidate if qualified therefor. Applications on form E.C. 16A should reach the undersigned not later than 29th January, 1955. Further particulars available on request.
J. BLUNDEN Clerk of the Council.
10, Gun-street, Reading, Berks.

CREWE, CHESHIRE. **Applications from experienced** general practitioners are invited for a VACANCY in this urban area caused by the resignation of 2 practitioners practising as "husband and wife partnership." Combined lists approximately 5000. Maternity medical service acceptances approximately 28 cases per quarter. Residence and surgery accommodation understood available for purchase. 2 or more practitioners able and willing to practise in partnership may make joint application but each must complete official application form giving required personal information. Single-handed applicants will be expected to give an undertaking to employ an assistant preferably with a view to partnership within such a period as the Council may determine. The successful applicant(s) must be in the position to take over the practice on 1st April, 1955. Applications on Form E.C.16A obtainable from the Executive Council must be received at the Council's Office not later than 27th January, 1955. Clerk, Cheshire Executive Council.
28, Nicholas-street, Chester.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Medical Director required by manufacturers of ethical pharmaceutical preparations with world-wide connections. Duties would include personal contact with leading Medical Consultants. Arrangements for clinical trials and study of medical literature leading to the introduction of new products. Also be responsible for the provision of medical information to assist other departments and supervision of correspondence on medical matters. Applicants should possess M.D. degree and, if possible, have had experience as Medical Registrar. Minimum salary £2500.—Apply in strict confidence to Personnel Manager, Address, No. 995, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applications are invited from registered medical practi- tioners for the appointment of part-time Visiting Medical Officer to an Old Age Home accommodating 168 men and women including 18 infirm, but these numbers will be increased to approximately 250 within the next 2 years. 2 sessions weekly in addition to being on-call in case of emergency. There is a resident trained nursing staff on duty. Salary £200 p.a., plus fees from National Health Service.

Applications, stating age, nationality, qualifications, previous appointments, together with names and addresses of 2 referees, should be forwarded to the Secretary, Home for Aged Jews, 105, Nightingale-lane, S.W.12.

Senior Technician with experience in Biochemistry and/or Biology required for position of Research Assistant to the Research Manager of a company manufacturing Pharmaceutical and Medicinal Preparations. The post is a responsible one and calls for a first-rate, thorough worker, possessing keenness and initiative. Contributory Pension Scheme.—Apply to : Secretary, BENGER'S LIMITED, Holmes Chapel, Cheshire.

Well-educated Woman, with son 3 years, desires residential post as Doctor's Receptionist or similar. Nursing and clerical experience. Able to type. Own furniture, &c., available. Willing to undertake additional duties. Middlesex, Herts, Bucks.—Mrs. THORPE, 13, Rendlesham-avenue, Radlett.

Surgeon seeks unfurnished Consulting Room with service in Doctor's house. W.1, but not in consulting rectangle.—Address, No. 996, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Priors Nursing-home, Leamington Spa. **Well-known** nursing-home of high repute, for sale, on account of retirement of owner. Running to capacity. 13 Beds, for surgical, medical and midwifery patients. Fully equipped operating-theatre. Freehold.—Apply for particulars to the Secretary, 51, Lillington-road, Leamington Spa.

The British Journal of Medical Hypnotism. **Quarterly** £1 1s. p.a.—Orders to the Publishers, 4, Victoria-terrace, Hove, 3, Sussex.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry. Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Austin. The new Cambridge A40 and A50 and all Show Models. Limited number of orders now acceptable from proven essential users.—Application form, brochures, easy terms, from Austin House, 140/144, Golders Green-road, Golders Green, London, N.W.11.

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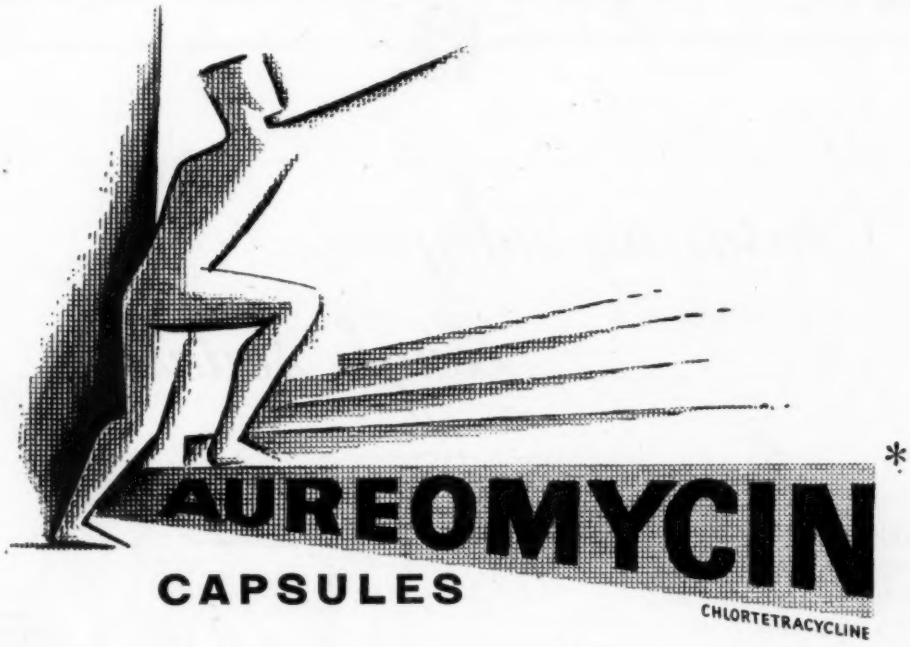

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